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UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT

MAY 2000

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Bracknell and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from each unique identifier for ships, fixed buoys and platforms.
Standard of comparison	:Background field from UKMO global model.
Observation times	:00, 06, 12, 18 UTC
Elements monitored	:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (Degrees).

Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa (pressure) :25 m s^{-1} (vector wind)		
SELECTION CRITERIA	:NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
	3.PGE	≥ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
BOAB	ALL	P	SUR	23	0	0	3.2	-4.4	5.4
C6FE5	ALL	P	SUR	38	0	0	0.7	6.4	6.4
DDQI	ALL	P	SUR	21	0	0	3.0	6.9	7.5
DGAF	ALL	P	SUR	32	0	0	2.0	-5.9	6.2
ELMQ	ALL	P	SUR	27	0	0	0.7	-4.6	4.6
ELTE6	ALL	P	SUR	75	0	0	1.4	-4.7	4.9
ELUB5	ALL	P	SUR	65	0	0	1.6	9.2	9.3
ELVJ9	ALL	P	SUR	40	0	0	0.9	-4.0	4.1
LAFQ5	ALL	P	SUR	24	2	8	1.2	-6.3	6.4
MXAR9	ALL	P	SUR	85	0	0	1.5	4.2	4.4
PDAH	ALL	P	SUR	32	0	0	2.9	-4.5	5.4
P3YS5	ALL	P	SUR	60	0	0	1.3	5.0	5.2
UAMS	ALL	P	SUR	24	0	0	0.9	-10.2	10.2
UBAU	ALL	P	SUR	39	10	26	8.8	0.0	8.8
UDUK	ALL	P	SUR	36	0	0	1.4	4.4	4.6
UFAA	ALL	P	SUR	27	2	7	1.8	9.1	9.3
VCJM	ALL	P	SUR	43	43	100			
VDFP	ALL	P	SUR	37	37	100			
WAUU	ALL	P	SUR	22	0	0	1.3	4.1	4.3
WCN3586	ALL	P	SUR	56	3	5	3.4	-5.5	6.4
WCZ5535	ALL	P	SUR	23	1	4	1.1	-4.4	4.5
WDZB	ALL	P	SUR	36	0	0	0.7	-5.5	5.6
1BBXXUAS	ALL	P	SUR	24	0	0	2.0	9.7	10.0
3FGN3	ALL	P	SUR	23	7	30	4.7	-7.5	8.8
3FPA6	ALL	P	SUR	20	10	50	10.4	0.4	10.4
4XGV	ALL	P	SUR	49	0	0	1.5	5.6	5.8
62138	ALL	P	SUR	65	1	2	1.6	-5.1	5.3
62414	ALL	P	SUR	63	1	2	6.3	3.4	7.1
9MBX5	ALL	P	SUR	31	0	0	1.2	9.3	9.4
WIND SPEED									
C6NI3	ALL	SPEED	SUR	24	0	0	5.5	7.1	9.0
ELDG4	ALL	SPEED	SUR	182	0	0	4.2	5.4	6.8
ELXD6	ALL	SPEED	SUR	20	0	0	3.1	5.9	6.7
ELXU4	ALL	SPEED	SUR	39	0	0	5.8	7.7	9.6
MZBN2	ALL	SPEED	SUR	48	0	0	5.0	9.0	10.3
UCUF	ALL	SPEED	SUR	28	0	0	3.5	5.4	6.4
VRUH8	ALL	SPEED	SUR	54	0	0	4.3	14.4	15.0
V2PB1	ALL	SPEED	SUR	64	0	0	4.6	5.0	6.8
3FIQ7	ALL	SPEED	SUR	45	0	0	5.4	5.2	7.5
3FSL4	ALL	SPEED	SUR	44	0	0	3.1	5.1	5.9
9MUG	ALL	SPEED	SUR	28	0	0	6.5	5.4	8.4
WIND DIRECTION									
46059	ALL	DIRN.	SUR	432	0	0	17.1	-30.6	35.0
62131	ALL	DIRN.	SUR	28	0	0	13.9	36.2	38.7

AVAILABILITY - SHIP/SYNOP - MAY 2000

FIGURE 1

MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 21621

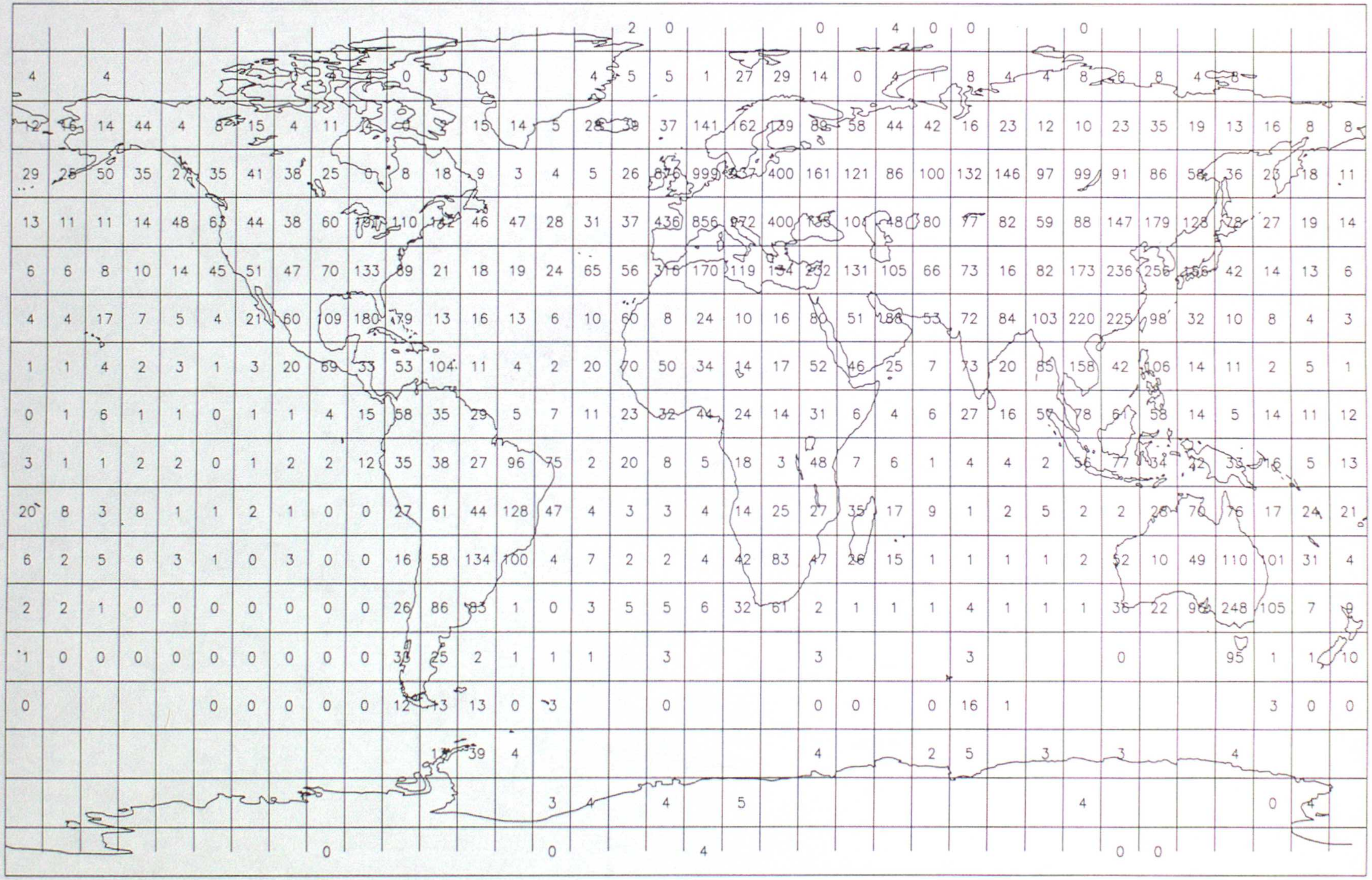


TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from each unique identifier for drifting buoys.
Standard of comparison	:Background field from UKMO global model.
Position	:Average latitude and longitude for period.
Observation times	:00, 06, 12, 18 UTC
Elements monitored	:Mean sea level pressure (hPa). :Wind speed ($m\ s^{-1}$). :Wind direction (degrees).

Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
	:25 $m\ s^{-1}$	(vector wind)

SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa	(pressure),
		≥ 5 $m\ s^{-1}$	(wind speed),
		≥ 30 degrees	(direction).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
17536	-28.5	-25.5	ALL	P	SUR	133	0	0	3.4	8.2	8.9
25565	43.4	-86.5	ALL	P	SUR	159	159	100			
31949	-35.6	-41.0	ALL	P	SUR	1172	234	20	4.0	6.5	7.6
31953	-20.8	-40.7	ALL	P	SUR	641	0	0	3.8	5.2	6.5
31960	-30.4	-35.9	ALL	P	SUR	172	172	100			
32639	-28.6	-88.0	ALL	P	SUR	226	35	15	3.9	-9.0	9.8
33904	-43.5	7.9	ALL	P	SUR	272	1	0	3.4	5.3	6.3
33954	-41.6	12.2	ALL	P	SUR	262	5	2	3.2	5.0	5.9
34915	-29.5	-94.4	ALL	P	SUR	270	91	34	1.0	-0.2	1.0
46561	25.5	-174.0	ALL	P	SUR	194	0	0	0.8	-4.5	4.6
46681	35.6	-75.6	ALL	P	SUR	46	46	100			
47561	85.9	-64.1	ALL	P	SUR	342	103	30	1.0	-1.5	1.8
48575	77.2	-166.4	ALL	P	SUR	149	143	96	0.1	14.2	14.2
52815	-9.3	-178.2	ALL	P	SUR	52	51	98	0.0	3.9	3.9
54812	43.6	1.4	ALL	P	SUR	55	55	100			
56808	25.0	-119.7	ALL	P	SUR	31	31	100			
63661	-8.3	-120.4	ALL	P	SUR	125	89	71	1.4	0.0	1.4
63662	87.5	-86.5	ALL	P	SUR	144	113	78	6.1	7.7	9.8
71554	-71.2	-110.7	ALL	P	SUR	157	118	75	6.3	-0.7	6.3
71555	-70.7	-113.5	ALL	P	SUR	107	71	66	6.5	-1.0	6.6
71556	-72.3	-116.0	ALL	P	SUR	100	80	80	6.4	-1.7	6.7
74534	39.8	-81.6	ALL	P	SUR	31	30	97	0.0	-2.2	2.2
WIND SPEED											
41595	10.3	-45.7	ALL	SPEED	SUR	139	0	0	9.2	7.6	11.9
52539	21.5	134.2	ALL	SPEED	SUR	56	0	0	8.4	6.5	10.6
62675	37.9	-10.9	ALL	SPEED	SUR	62	0	0	2.2	5.5	5.9
62722	38.1	-10.5	ALL	SPEED	SUR	89	0	0	2.0	5.4	5.8
62725	36.7	-9.5	ALL	SPEED	SUR	54	0	0	1.5	5.8	6.0
62762	38.0	-10.3	ALL	SPEED	SUR	42	0	0	1.1	6.3	6.4
WIND DIRECTION											
41594	15.2	-43.2	ALL	DIRN.	SUR	198	0	0	11.4	40.0	41.6

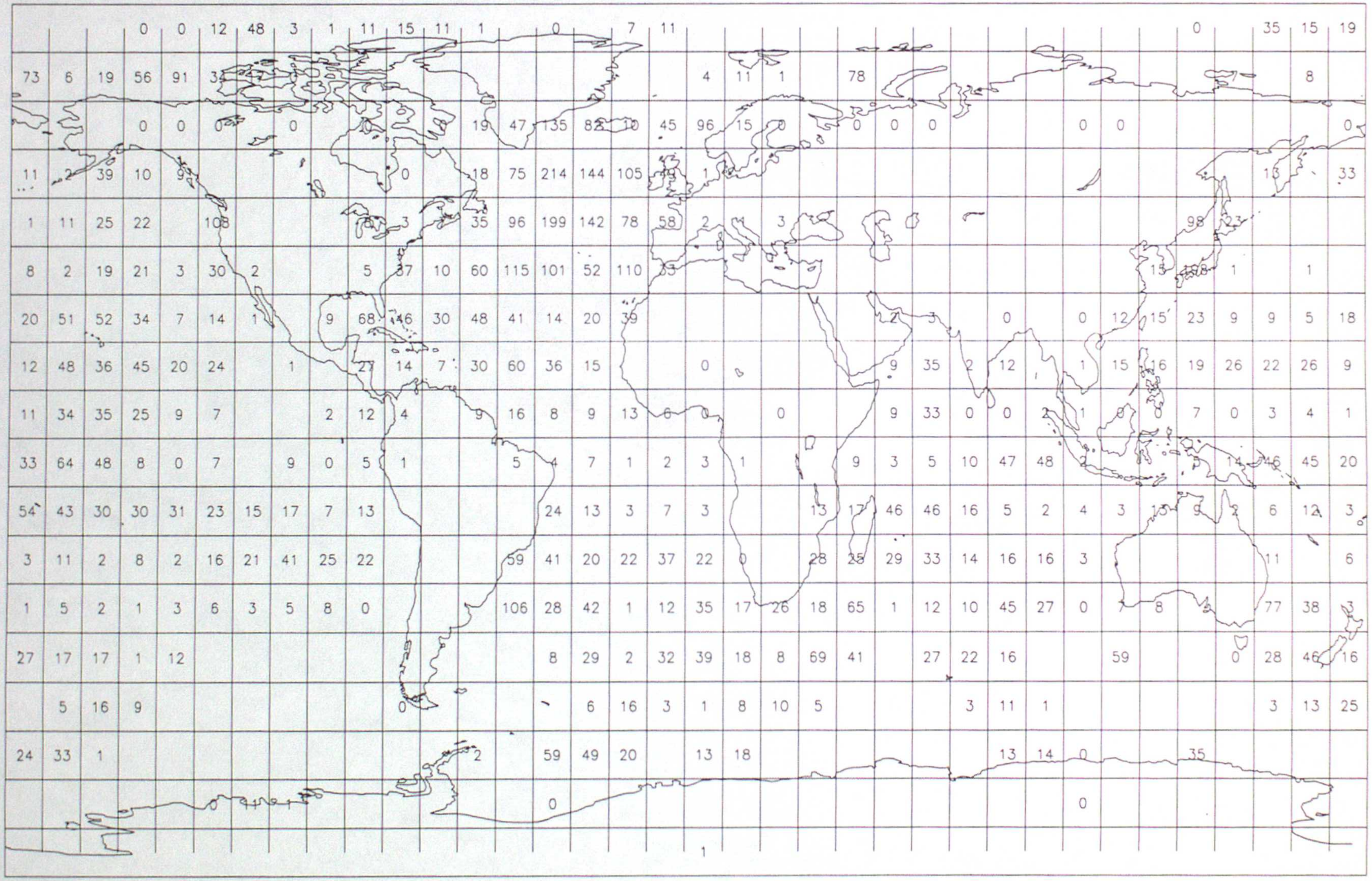
AVAILABILITY – DRIFTER – MAY 2000

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 7996

FIGURE 2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73 6 19 56 91 3 4 11 1 78 8
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11 2 39 10 9 0 18 75 214 144 105 49 1 13 33
1 11 25 22 108 3 35 96 199 142 78 58 2 1 3 98 23
8 2 19 21 3 30 2 5 37 10 60 115 101 52 110 33 13 158 1 1
20 51 52 34 7 14 1 9 68 46 30 48 41 14 20 39 2 3 0 0 12 15 23 9 9 5 18
12 48 36 45 20 24 1 27 14 7 30 60 36 15 0 9 35 2 12 1 15 16 19 26 22 26 9
11 34 35 25 9 7 2 12 4 9 16 8 9 13 6 0 0 9 33 0 0 2 1 8 0 7 0 3 4 1
33 64 48 8 0 7 9 0 5 1 5 4 7 1 2 3 1 9 3 5 10 47 48 2 14 46 45 20
54 43 30 30 31 23 15 17 7 13 24 13 3 7 3 13 17 46 46 16 5 2 4 3 13 9 2 6 12 3
3 11 2 8 2 16 21 41 25 22 59 41 20 22 37 22 0 28 25 29 33 14 16 16 3 11 6
1 5 2 1 3 6 3 5 8 0 106 28 42 1 12 35 17 26 18 65 1 12 10 45 27 0 7 8 77 38 3
27 17 17 1 12 8 29 2 32 39 18 8 69 41 27 22 16 59 0 28 46 16
5 16 9 0 6 16 3 1 8 10 5 3 11 1 3 13 25
24 33 1 2 59 49 20 13 18 13 14 0 35
0 0 0
1

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60445	36.2N	5.4E	1081	S8	112	1	1	0	0.8	4.5	4.6
60468	35.6N	6.2E	1052	S8	111	111	100	0			
60511	35.3N	1.4E	1127	S8	111	69	62	0	0.7	14.2	14.2
60535	34.7N	3.3E	1144	S8	86	0	0	0	0.7	-6.3	6.3
60670	24.6N	9.5E	1054	S8	109	1	1	1	0.6	9.6	9.6
63602	3.1N	30.9E	1204	S	53	48	91	43	7.4	1.9	7.6
63680	0.3N	32.6E	1144	S	23	0	0	0	1.6	-6.4	6.6
68030	18.5S	25.6E	1071	8	21	0	0	0	1.1	4.4	4.5
68038	20.5S	26.0E	903	8	29	0	0	0	0.8	4.0	4.1
68106	23.6S	15.1E	407	S	48	16	33	0	1.9	0.3	1.9
68338	26.9S	24.6E	1234	S8	47	44	94	0	0.1	-0.4	0.4
68396	26.5S	31.3E	641	S8	54	0	0	0	0.8	4.2	4.3
68558	30.9S	27.6E	1816	S8	63	28	44	0	0.9	-0.5	1.0
68754	32.5S	27.5E	899	S8	75	36	48	1	1.6	-1.0	1.9

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30320	56.9N	105.7E	669	MS	118	58	49	0	2.2	0.0	2.2
40701	39.3N	44.4E	1470	MS	88	1	1	0	1.0	7.0	7.1
40738	36.8N	54.5E	155	MS	87	75	86	0	1.5	13.4	13.5
40741	36.6N	61.2E	235	MS	89	0	0	0	1.5	-4.3	4.6
40743	36.2N	57.7E	941	MS	113	0	0	1	1.4	-6.1	6.3
40762	35.3N	59.2E	1333	MS	113	19	17	0	1.1	-13.3	13.3
40763	35.2N	58.5E	1060	MS	91	1	1	1	1.0	-6.9	7.0
40783	32.4N	49.7E	1972	MS	76	2	3	0	1.0	-6.2	6.3
40789	33.8N	55.1E	921	MS	64	0	0	5	2.4	6.4	6.8
40836	30.8N	51.7E	1880	MS	50	0	0	0	1.0	7.4	7.5
40859	29.0N	53.7E	1383	MS	91	1	1	2	1.2	8.3	8.4
41254	23.1N	57.7E	1755	S8	77	77	100	0			
41396	16.0N	48.9E	700	MS	53	0	0	0	0.8	6.7	6.7
41466	13.7N	44.1E	1402	8	41	0	0	2	1.0	-5.6	5.7
41535	34.2N	73.3E	1308	8	46	0	0	2	1.1	-5.6	5.7
44416	28.6N	81.6E	720	MS	64	2	3	2	1.5	4.0	4.3
51495	43.5N	91.6E	874	M	121	0	0	0	1.5	6.8	7.0
52955	35.6N	100.8E	3201	S	122	3	2	0	0.7	13.3	13.3
53588	39.0N	113.5E	2898	S	122	122	100	0			
56444	28.5N	98.9E	3488	S	121	67	55	23	0.7	13.6	13.6
56462	29.0N	101.5E	2994	S	122	0	0	0	1.6	9.2	9.3
57816	26.6N	106.7E	1074	MS	121	58	48	26	0.6	-13.9	13.9

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	44	0	0	0	1.0	-6.2	6.3
82704	7.6S	72.7W	170	MS	86	0	0	0	1.2	-4.0	4.2
83214	10.3S	54.9W	285	MS	82	0	0	0	1.7	-7.3	7.5
83235	12.4S	46.4W	604	MS	86	0	0	2	1.1	5.9	6.0
83319	14.7S	52.4W	315	MS	82	0	0	0	0.6	-5.5	5.5
83332	14.1S	46.4W	826	MS	89	3	3	0	1.8	13.2	13.3
83376	15.9S	49.0W	740	MS	89	1	1	2	1.3	-4.0	4.2
83408	14.3S	43.8W	447	MS	85	1	1	0	0.7	9.8	9.8
83423	16.7S	49.3W	741	MS	89	0	0	3	1.8	-4.2	4.6
83488	17.8S	42.9W	1097	MS	88	88	100	0			
83531	18.6S	46.5W	940	MS	81	0	0	0	0.7	-6.8	6.8
83587	19.9S	43.9W	850	MS	86	0	0	0	0.7	-6.6	6.6
83704	22.3S	53.9W	369	MS	90	0	0	0	1.0	-9.6	9.7
83773	23.1S	48.9W	793	MS	64	13	20	0	1.7	-11.8	11.9
83836	25.5S	50.6W	837	MS	88	0	0	0	0.8	-4.8	4.9

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83953	30.9S	55.5W	231	MS	88	0	0	0	1.0	-11.3	11.3
84377	3.8S	73.3W	125	MS	94	0	0	0	1.2	4.1	4.3
84401	5.2S	80.6W	49	MS	95	0	0	1	1.3	4.0	4.2
84425	5.9S	76.1W	179	MS	45	0	0	0	0.9	4.8	4.9
84455	6.5S	76.4W	281	MS	65	0	0	0	1.0	4.5	4.6
84472	7.1S	78.5W	2620	S	40	1	3	0	0.9	-4.7	4.8
84474	7.2S	76.7W	350	S	44	0	0	0	1.3	9.5	9.6
84542	9.4S	77.6W	2750	S	37	1	3	8	1.3	5.8	5.9
84686	13.6S	72.0W	3248	S	93	0	0	0	1.0	-4.0	4.1
84688	13.7S	73.4W	3444	S	37	4	11	3	0.9	-12.6	12.6
84720	14.9S	75.0W	567	MS	69	0	0	0	0.9	4.2	4.3
84782	18.1S	70.3W	468	MS	95	0	0	0	1.4	9.1	9.2
85140	14.3S	67.4W	140	MS	56	1	2	0	1.7	4.2	4.5
85141	14.5S	67.6W	204	MS	57	0	0	4	2.2	4.6	5.1
85230	17.6S	69.6W	4054	S	55	3	5	7	2.1	4.5	5.0
85264	18.5S	64.1W	1998	S	56	56	100	0			
85312	19.8S	63.9W	992	S	45	2	4	0	1.1	-9.0	9.1
85345	21.3S	63.4W	398	MS	56	0	0	2	1.6	4.0	4.3
85394	22.8S	64.3W	381	MS	44	0	0	0	1.7	4.1	4.4
85406	18.3S	70.3W	55	M	115	0	0	0	1.1	5.6	5.7
85432	22.5S	68.9W	2320	S8	82	0	0	1	1.1	6.1	6.2
85836	43.6S	71.8W	277	M	39	0	0	0	1.9	5.8	6.1

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71506	66.9N	136.3W	600	MS	121	119	98	0	0.7	-14.1	14.1
72340	34.8N	92.3W	165	MS	121	0	0	51	0.8	10.4	10.4
76118	30.4N	109.7W	1040	MS	39	1	3	0	1.6	-12.4	12.5
76632	20.1N	98.7W	2417	MS	31	0	0	0	0.7	-4.5	4.6
76658	19.2N	103.7W	494	MS	30	0	0	3	1.8	6.8	7.0
76773	17.8N	97.8W	1680	MS	53	0	0	0	0.8	8.2	8.2
76775	17.1N	96.7W	1550	MS	70	0	0	0	0.7	4.8	4.9
76845	16.7N	92.6W	2276	MS	42	42	100	0			
78229	23.1N	81.3W	3	MS	20	0	0	5	2.1	-4.9	5.3

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
91163	21.9N	159.6W	7	8	348	348	100	0			
92010	6.1S	145.4E	1587	M	44	0	0	0	0.6	10.2	10.2
95611	34.6S	118.5E	107	MS	112	5	4	9	2.0	10.1	10.3
95909	36.5S	148.3E	1957	MS	117	117	100	0			
96755	6.6S	106.9E	171	M	38	14	37	0	0.5	1.1	1.2
97378	10.7S	123.1E	1	MS	36	35	97	100	0.0	-14.7	14.7

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01245	62.8N	9.7E	671	MS	91	1	1	1	1.0	7.8	7.9
10557	50.5N	11.1E	845	S8	366	366	100	0			
10954	47.8N	10.9E	540	S8	185	185	100	0			
12140	54.4N	18.7E	2	MS	120	0	0	0	0.6	7.6	7.6
13269	44.3N	19.9E	176	MS	119	0	0	1	1.2	7.6	7.7
14554	44.9N	18.4E	140	S	60	0	0	0	0.7	-12.8	12.8
14650	43.8N	18.0E	967	S	61	3	5	2	1.6	-8.1	8.3
16470	36.8N	12.0E	191	MS	80	1	1	1	0.7	-4.2	4.3
17042	41.4N	41.4E	33	M	122	0	0	21	2.7	4.2	5.0
17092	39.8N	39.5E	1218	S8	122	0	0	0	1.4	7.1	7.2

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
17203	38.9N	40.5E	1177	S8	122	0	0	0	1.1	4.4	4.5

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89264	71.4S	68.9W	780	S	233	0	0	0	1.4	7.2	7.3
89266	72.2S	60.3W	91	S	242	180	74	0	3.3	-13.4	13.8
89272	75.0S	70.8W	1395	S	215	215	100	0			
89327	73.2S	127.1W	30	S	228	228	100	0			
89744	74.0S	43.0E	3353	S	248	0	0	0	0.8	7.9	7.9
89769	78.5S	168.4E	50	S	381	381	100	0			
89774	73.4S	76.8E	2563	S	274	0	0	0	1.2	4.0	4.2
89805	74.1S	109.8E	3096	M	167	51	31	0	3.3	3.8	5.0
89847	67.6S	146.0E	30	S	294	5	2	1	2.1	-9.4	9.6

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in $m\ s^{-1}$
Parameters monitored		
	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 $m\ s^{-1}$ Vector Wind
SELECTION CRITERIA		:N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	49	2	53	2.0	1.0	51	0	47	0	6.9	1.8
AAH	918	0	38	1.2	0.6	906	0	38	0	6.6	0.9
AAL	7070	0	17	1.4	0.1	7037	0	18	0	7.7	1.2
AAR	1709	0	8	1.7	-0.4	1710	0	8	0	7.7	0.8
ACA	2030	0	3	1.8	0.0	2061	0	3	0	7.2	0.9
ACI	54	2	59	1.8	0.2	53	0	58	0	8.6	0.8
AEA	512	1	6	1.8	0.6	491	0	6	0	8.0	1.1
AEL	594	1	8	1.5	-0.3	593	0	8	0	7.4	0.6
AEY	103	0	2	2.2	0.9	102	1	2	0	6.6	0.3
AFL	545	0	3	1.7	0.3	545	0	3	0	7.4	0.9
AFR	2015	1	9	1.6	0.0	2018	0	8	0	7.1	0.6
AIH	290	1	8	1.6	-0.3	288	0	8	0	6.7	1.1
AJM	161	1	4	1.5	-0.3	160	0	5	0	7.9	1.4
AMM	128	2	6	1.5	0.3	124	0	7	0	8.8	0.7
AMT	714	1	73	2.5	1.6	718	0	41	0	6.2	1.2
AMX	301	3	6	1.9	0.4	300	1	3	0	8.5	0.8
ANA	1602	0	10	1.6	0.1	1595	0	11	0	7.8	0.8
ANZ	4662	0	40	1.6	0.1	4649	0	40	0	7.9	1.2
AOM	1032	2	10	1.8	0.9	1038	0	9	0	6.9	0.5
ARG	66	2	27	2.8	0.9	69	0	25	0	11.0	0.9
AVA	618	0	4	1.8	0.5	614	0	5	0	8.3	0.5
AVN	128	0	50	1.3	0.4	128	0	52	0	8.4	0.6
AXF	79	0	33	1.0	0.3	79	0	35	0	11.9	0.6
AZA	843	2	6	1.9	0.4	837	0	6	0	8.2	0.7
BAF	27	0	4	1.6	-0.7	27	0	4	0	7.5	1.9
BAL	324	1	9	1.4	-0.2	326	1	10	0	7.8	0.5
BAW	1884	1	7	1.9	0.1	1876	0	7	0	6.9	0.8
BBB	25	4	4	1.2	-0.5	24	0	4	0	8.6	1.6
BLX	40	5	5	1.8	-0.7	40	0	0	0	6.8	0.6
BWA	353	1	8	2.2	1.2	353	0	9	0	9.4	0.5
CAL	410	0	7	1.6	0.5	412	0	8	0	8.6	0.5
CCA	279	3	100	2.6	0.5	309	0	100	0	13.3	0.1
CDN	2065	1	7	1.6	0.0	2062	0	8	0	8.0	0.5
CES	335	0	4	1.5	0.6	349	1	100	0	10.0	0.1
CFC	32	0	3	1.8	0.5	34	0	3	0	5.8	0.7
CFG	986	1	3	1.5	-0.7	972	0	3	0	7.6	0.3
CLX	403	0	5	1.5	-0.1	401	0	5	0	6.5	0.3
CMI	306	1	3	1.8	0.5	301	0	2	0	8.1	0.4
CMM	705	0	5	1.5	0.1	699	0	6	0	6.4	0.8
COA	1491	1	26	1.4	0.1	1488	0	26	0	8.5	1.4
CPA	53	2	9	1.4	0.8	53	0	9	0	5.9	-0.2
CRL	643	1	11	1.7	0.6	640	0	11	0	7.7	0.7
CSN	142	2	11	2.3	0.9	143	0	9	0	9.7	0.8
CTB	174	0	6	1.5	0.1	175	0	9	0	6.6	1.1
CTM	39	3	33	2.5	0.1	39	0	33	0	14.9	-0.4
CUB	218	1	4	2.3	1.5	215	0	5	0	9.5	0.8
DAF	21	0	0	1.3	-0.2	21	0	0	0	5.2	2.4
DAL	4190	0	33	1.5	0.2	4198	0	33	0	7.5	0.7
DBY	749	0	2	1.6	-0.3	734	0	3	0	7.4	1.1
DCS	39	0	3	1.7	-0.3	40	0	5	0	6.8	1.1
DLH	2226	0	5	1.6	-0.1	2193	0	5	0	6.4	0.8
EEZ	144	1	100	2.6	1.5	141	0	11	0	10.2	2.2
EIA	332	1	40	1.6	0.3	323	0	39	0	7.1	2.0
ELY	154	0	1	1.2	-0.1	155	0	3	0	8.2	1.4
ETH	26	0	15	1.1	-0.3	28	0	18	0	9.8	0.9
EVA	1289	1	4	1.5	-0.2	1312	0	5	0	8.4	0.3
EWW	106	0	7	1.7	0.3	108	0	6	0	7.1	0.7
FDX	1832	1	19	1.5	0.5	1835	0	18	0	7.2	0.8
FIN	266	0	2	1.6	0.2	258	0	3	0	7.4	0.3

IDENT.	TEMPERATURE N.REP.	PG	PR	RMS	BIAS	WIND N.REP.	PG	PR	PC	RMS	BIAS
FJI	866	2	48	1.9	0.8	840	0	48	0	8.7	1.3
FOM	466	0	36	1.5	0.5	468	0	37	0	7.2	1.0
FWQ	29	7	48	1.1	0.2	29	0	45	0	5.5	0.6
GAF	115	0	3	1.5	-0.2	115	1	4	0	6.2	0.3
GCO	146	2	17	1.5	0.5	146	0	25	0	12.8	1.4
GIA	29	7	21	1.5	1.2	26	0	15	0	8.6	3.1
GRL	71	0	6	1.6	0.1	71	0	4	0	5.0	0.3
GTI	213	0	5	1.7	-0.2	222	0	6	0	9.4	0.7
HAL	4150	0	38	1.3	0.5	4076	0	39	0	9.1	2.0
HLF	104	0	3	1.5	-0.6	103	0	5	0	7.4	0.5
HRH	264	0	64	1.2	0.0	261	0	64	0	7.9	1.2
IBE	3056	1	8	1.8	0.7	2981	0	8	0	7.9	0.6
ICE	1247	0	3	1.6	0.1	1240	0	3	0	6.5	0.8
ILU	24	0	0	1.8	0.8	28	0	4	0	10.3	0.6
IWD	192	1	3	1.4	-0.5	191	0	5	0	9.9	1.5
JAA	56	14	14	2.1	1.5	57	0	4	0	7.3	3.0
JAL	6568	0	5	1.6	0.2	6530	0	6	0	8.5	0.9
JAZ	720	0	3	2.0	1.4	706	0	3	0	7.7	0.8
JKK	342	0	6	1.4	0.1	311	0	10	0	10.3	0.7
JMC	270	0	10	1.9	1.2	246	0	13	0	7.2	0.4
KAL	3640	0	9	1.7	-0.2	3626	0	9	0	8.6	0.9
KIW	33	6	42	2.4	1.7	34	0	41	0	10.0	-2.4
KLM	2782	0	10	1.5	0.2	2774	0	10	0	6.9	0.7
LAN	85	1	21	2.2	0.6	87	0	21	0	8.4	1.4
LAP	64	0	27	2.6	1.1	63	0	25	0	8.8	1.7
LDA	163	0	3	1.3	0.1	161	0	2	0	7.1	0.8
LDI	713	1	100	1.6	-1.0	702	0	7	0	7.9	0.7
LIB	381	1	4	1.6	1.0	382	0	5	0	7.8	0.6
LOT	331	0	4	1.9	-0.9	332	0	6	0	7.4	0.7
LPR	30	3	7	2.1	0.6	30	0	10	0	11.6	-0.2
LTU	857	0	6	1.5	-0.1	841	0	7	0	7.0	0.8
MAH	26	0	4	2.5	-1.0	27	0	4	0	10.1	1.5
MAS	476	1	10	1.8	0.3	495	0	10	0	7.7	0.7
MMZ	23	0	0	1.4	0.2	23	0	0	0	8.1	2.2
MON	132	0	6	1.9	-0.1	134	0	4	0	6.6	1.2
MPD	405	0	6	1.8	0.4	399	0	5	0	7.6	0.6
MPH	802	0	4	1.8	-0.3	797	0	4	0	7.7	0.6
NCA	670	0	3	1.6	0.5	666	0	3	0	7.6	0.6
NWA	11202	0	10	1.8	0.6	11086	0	11	0	8.1	0.6
OAL	20	0	5	1.9	-0.1	22	0	5	0	10.0	2.4
PAC	400	1	26	1.8	0.3	401	0	24	0	7.1	1.1
PAL	1593	1	14	1.4	0.0	1530	0	15	0	8.1	0.5
PAO	420	0	62	1.2	0.2	420	1	63	0	8.3	1.7
PUA	23	4	43	2.7	-0.4	24	0	46	0	13.1	3.3
QFA	2492	0	59	1.5	0.4	2491	0	59	0	7.2	0.9
RAF	47	0	13	2.9	1.1	46	0	17	0	15.1	2.7
RAM	58	0	9	3.0	-0.7	57	0	12	0	11.4	2.3
RCH	318	2	19	2.0	0.3	307	1	21	0	9.2	1.0
RJA	47	0	4	1.8	-0.4	47	2	9	0	7.7	0.9
RKA	91	3	3	1.3	-0.7	90	0	1	0	6.0	0.6
ROY	100	1	9	2.0	-0.3	103	0	10	0	10.1	1.8
RRR	268	2	11	1.7	0.4	265	0	12	0	7.4	0.7
RYN	559	3	46	1.9	1.1	541	0	43	0	6.8	1.0
RZO	252	2	11	2.2	-0.5	248	1	8	0	7.9	0.6
SAA	407	1	4	1.8	-0.4	403	0	3	0	7.2	0.6
SAS	1705	0	28	1.5	-0.3	1702	0	28	0	6.2	0.7
SIA	507	0	4	1.5	0.1	508	0	4	0	6.1	0.7
SLR	239	0	6	1.4	-0.8	239	0	8	0	8.8	0.7
SNB	45	0	2	1.5	-0.5	47	0	6	0	7.7	0.6

IDENT.	N.REP.	TEMPERATURE PG	PR	RMS	BIAS	N.REP.	WIND PG	PR	PC	RMS	BIAS
SOL	83	4	41	2.9	1.9	82	0	43	0	15.9	-0.8
SOO	123	0	43	4.6	4.5	118	0	44	0	8.9	1.1
SSV	30	0	7	1.6	-0.2	31	0	10	0	10.9	1.9
SVA	117	1	4	1.7	-0.2	124	1	6	0	7.3	1.0
SWR	86	1	8	1.5	0.4	84	1	10	0	7.5	1.7
TAP	719	1	7	1.6	-0.2	716	0	8	0	8.5	1.3
TCU	40	0	8	1.8	-0.8	41	0	5	0	5.8	0.9
THA	328	0	7	1.6	-0.2	322	1	8	0	8.3	0.5
THT	115	1	34	2.7	0.2	116	0	32	0	7.8	0.6
TOW	53	2	6	1.8	0.2	58	0	5	0	11.0	-0.9
TPA	53	0	4	1.0	0.5	52	0	4	0	8.4	0.9
TSC	147	1	3	1.8	0.3	150	0	5	0	9.4	0.6
TWA	1924	0	24	1.6	0.3	1876	0	24	0	7.1	1.0
UAL	128661	0	100	1.2	-0.1	128533	0	100	0	6.1	0.7
UPS	1545	1	25	1.5	0.3	1535	0	25	0	6.8	1.1
USA	273	1	3	1.3	0.0	226	0	3	0	6.3	1.1
VIR	709	0	3	1.7	-0.1	701	0	3	0	7.1	0.9
VKG	65	3	12	1.7	-0.3	66	2	14	0	8.9	-0.1
VPB	79	0	30	2.2	-0.4	80	0	29	0	11.1	1.9
VRG	231	1	32	2.3	0.7	240	0	70	0	14.1	2.2
VVR	74	0	35	3.3	1.0	71	0	32	0	7.3	2.3
WOA	182	1	7	1.4	0.5	193	1	9	0	7.7	0.3
AN	22843	0	18	1.2	0.3	22843	0	18	0	5.2	0.5
AR	567	24	100	3.7	3.4	567	0	34	0	15.4	5.4
BA	5254	0	9	1.5	0.8	5227	0	9	0	5.8	0.8
EU	78891	0	27	1.2	0.1	78891	0	27	0	5.1	0.6
KL	6944	0	13	1.3	0.8	6906	0	14	0	5.1	0.9
LH	2628	0	6	1.9	1.4	2614	0	6	0	5.7	1.2
MK	4108	0	5	1.7	1.2	4089	0	6	0	7.5	1.2
NZ	2452	0	10	1.3	-0.1	2452	0	10	0	6.3	0.5
QF	31900	0	13	1.3	0.7	31905	0	13	0	5.7	0.8
SA	3034	0	5	2.0	1.5	3017	0	5	0	7.2	1.0
WA	351	7	15	2.1	0.7	345	4	100	0	13.4	-1.4
XX	4720	2	7	1.5	0.4	5285	0	100	0	10.5	1.3
N	796	2	25	2.5	0.8	809	0	21	0	8.0	1.3
US ACARS	553081	0	48	1.3	0.4	553070	0	50	0	6.3	0.9

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

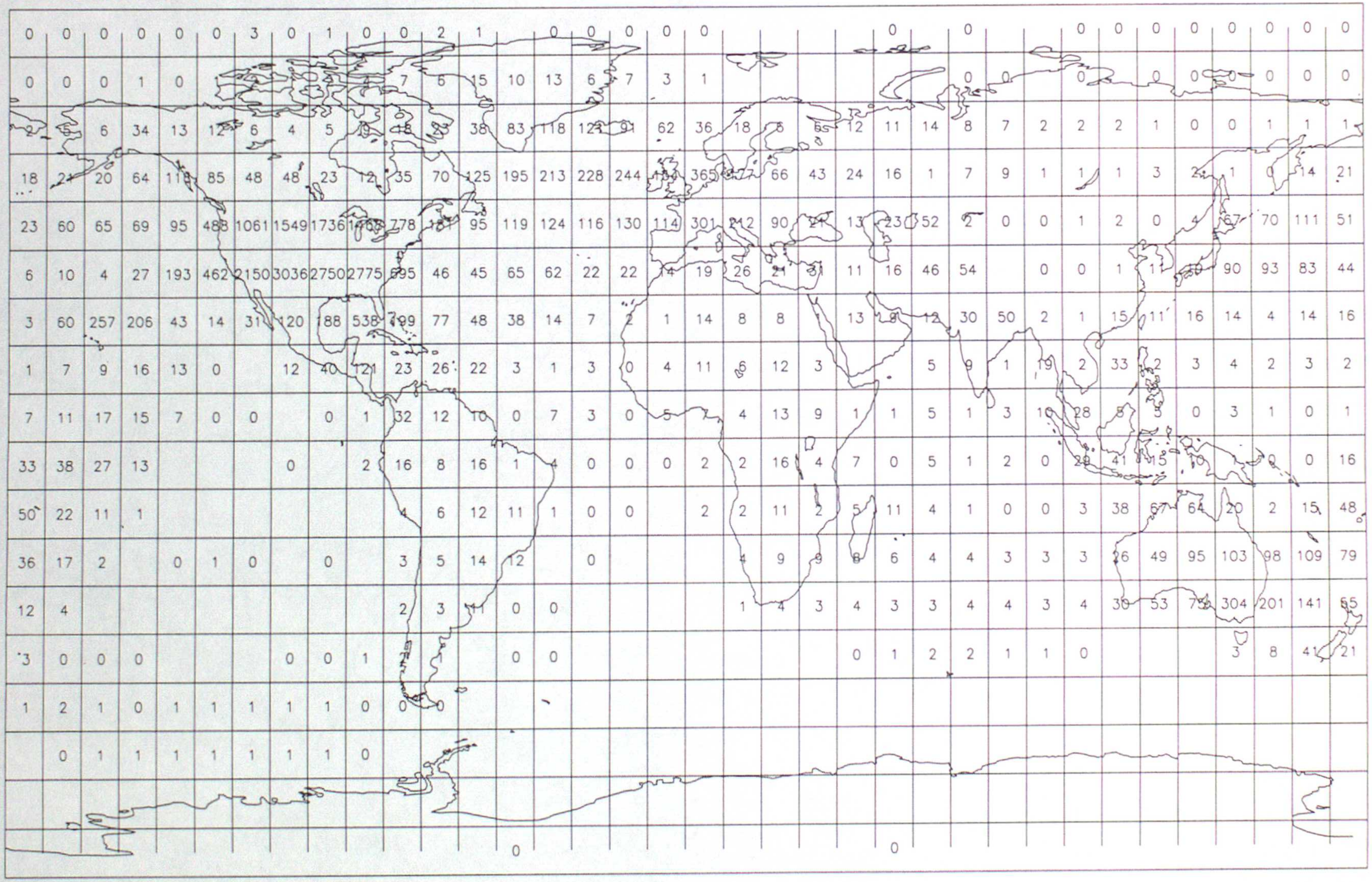
NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	429	0	23	1.2	0.2	419	0	23	0	7.8	2.1
AAR	48	4	25	2.1	-0.4	50	0	20	0	5.9	1.7
AFR	65	0	9	1.9	0.0	64	0	11	0	7.5	0.0
AMT	21	10	62	1.9	1.5	22	0	32	0	8.2	1.3
ANZ	121	12	43	1.8	0.0	123	0	40	0	10.9	2.5
AOM	84	2	6	1.7	1.1	85	0	4	0	6.3	0.4
AVN	22	0	50	1.7	-1.0	28	7	54	0	7.2	0.3
AXF	24	0	33	0.7	-0.1	24	0	33	0	4.8	-0.5
BAF	21	0	0	1.5	1.1	21	0	5	0	12.4	1.8
BSK	20	15	15	1.3	0.1	20	0	35	0	18.5	4.4
CAL	26	0	15	1.7	1.0	27	0	22	0	10.6	0.8
CFC	173	3	13	2.6	1.3	180	0	10	0	7.7	0.9
CFG	46	4	13	1.2	-0.4	45	0	11	0	11.3	1.9
CLX	28	4	4	1.5	-0.2	28	0	4	0	8.7	0.3
CMI	81	0	2	2.0	0.1	87	1	2	0	11.4	3.0
COA	95	0	31	1.0	0.2	97	0	33	0	8.9	0.9
CTM	36	0	31	4.4	-2.8	36	0	22	0	7.4	1.9
CUB	53	0	2	2.0	1.6	52	0	2	0	6.0	0.8
DAF	31	10	23	3.8	2.0	30	0	0	0	7.6	-0.2
DAL	243	0	35	1.6	0.7	247	0	36	0	7.9	0.7
DHL	158	1	58	6.3	-6.1	159	0	23	0	13.2	2.4
DLH	229	1	11	1.7	0.0	228	0	12	0	8.9	1.7
EIA	23	0	17	1.1	0.2	22	0	23	0	8.9	2.6
EVA	117	2	28	1.6	-0.7	116	2	28	0	9.6	1.5
EWW	105	0	2	1.7	0.7	107	0	10	0	11.9	1.3
FDX	556	0	8	1.6	0.7	553	0	9	0	9.0	1.2
FIN	42	0	10	1.4	0.3	39	3	13	0	8.3	0.3
FWQ	107	6	62	1.6	1.0	109	0	61	0	14.7	0.3
FXI	21	5	24	4.0	2.4	22	0	18	0	11.8	4.7
GAF	51	0	0	1.6	0.7	51	0	4	0	7.2	0.9
GCO	94	0	10	1.4	0.5	95	1	19	0	14.7	2.4
GHA	93	4	6	1.7	0.0	91	0	2	0	10.0	1.5
HAL	106	4	43	1.7	0.2	104	0	41	0	8.8	2.2
HLA	23	0	0	1.7	-0.4	23	0	9	0	11.1	0.1
IBE	87	5	18	1.9	0.8	87	1	22	0	11.4	1.3
ICE	71	0	3	1.1	-0.1	69	0	4	0	6.0	1.6
JAA	22	0	14	1.0	0.2	22	0	14	0	5.6	0.6
JAL	87	2	8	1.7	0.0	87	0	6	0	8.6	1.2
JAZ	104	1	6	1.9	1.3	103	0	6	0	7.9	-0.6
JMC	39	0	8	2.2	1.2	39	0	8	0	6.8	-1.0
KAL	122	2	17	1.5	-0.1	124	0	18	0	10.0	0.8
KIW	80	4	46	3.7	2.4	80	0	40	0	6.7	0.1
KLM	54	0	2	2.0	0.3	54	0	4	0	8.7	0.3
LIB	37	3	3	2.0	1.2	36	0	0	0	4.8	0.2
LTU	25	4	4	1.1	-0.6	26	4	4	0	6.2	1.2
MAS	26	0	35	1.1	-0.1	26	0	35	0	4.9	0.9
NCA	87	0	0	1.7	0.0	86	0	2	0	8.3	1.5
NWA	338	2	14	2.1	0.2	328	0	11	0	9.4	0.6
PAC	62	0	6	1.3	0.2	66	3	12	0	8.5	1.9
PAL	27	0	4	1.2	-0.3	25	0	4	0	6.0	-0.4
QFA	133	2	56	1.6	0.0	133	0	56	0	10.9	2.0
RCH	246	0	11	2.3	0.5	246	0	19	0	12.0	2.0
RRR	393	2	18	4.2	3.5	385	0	12	0	8.8	0.5
SAA	61	5	5	1.2	-0.8	55	0	0	0	6.0	-0.5
SAS	61	0	18	1.5	0.1	58	0	19	0	6.9	1.4
SIA	32	0	9	1.8	-0.5	32	0	6	0	5.9	2.3
SWR	54	0	15	1.7	1.1	54	0	33	0	16.5	-1.7
UAL	199471	0	100	1.3	0.0	198889	0	100	0	5.0	0.3
UPS	133	0	17	2.1	0.6	130	0	15	0	7.7	1.2

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
VHJ	107	0	3	2.2	-0.1	103	0	1	0	7.9	-0.1
VTA	51	10	25	3.1	-1.0	53	0	17	0	6.3	2.2
VVP	74	15	34	2.8	0.2	74	0	27	0	9.1	2.0
AN	73877	0	67	1.4	0.1	73411	0	67	0	4.2	0.3
AR	374	9	100	3.2	2.3	356	0	52	0	6.2	1.3
BA	4000	0	65	1.4	0.3	3942	0	65	0	4.5	0.7
EU	446074	0	75	1.0	0.2	444447	0	75	0	3.8	0.1
KL	5813	0	55	1.4	0.7	5774	0	55	0	4.1	0.5
LH	1172	0	62	1.4	0.7	1148	0	61	0	4.4	0.3
MK	3509	0	52	1.5	0.8	3472	0	52	0	5.9	0.9
NZ	7288	0	54	1.7	0.4	7247	0	54	0	6.1	0.7
QF	23097	0	58	1.3	0.5	23058	0	58	0	4.5	0.3
SA	1923	0	56	1.2	0.4	1906	0	55	0	4.7	0.8
WA	64	20	25	2.0	0.5	63	3	100	0	14.3	-2.5
XX	913	6	11	1.9	0.4	951	0	100	0	12.3	1.6
N	27	4	37	5.1	3.1	32	0	16	0	9.0	2.0
US ACARS	542534	0	53	1.4	0.4	539451	0	55	0	5.3	0.3

FIGURE 3A

MEAN DAILY COUNT OF AIRCRAFT 300 – 150 HPA
MAY 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 30752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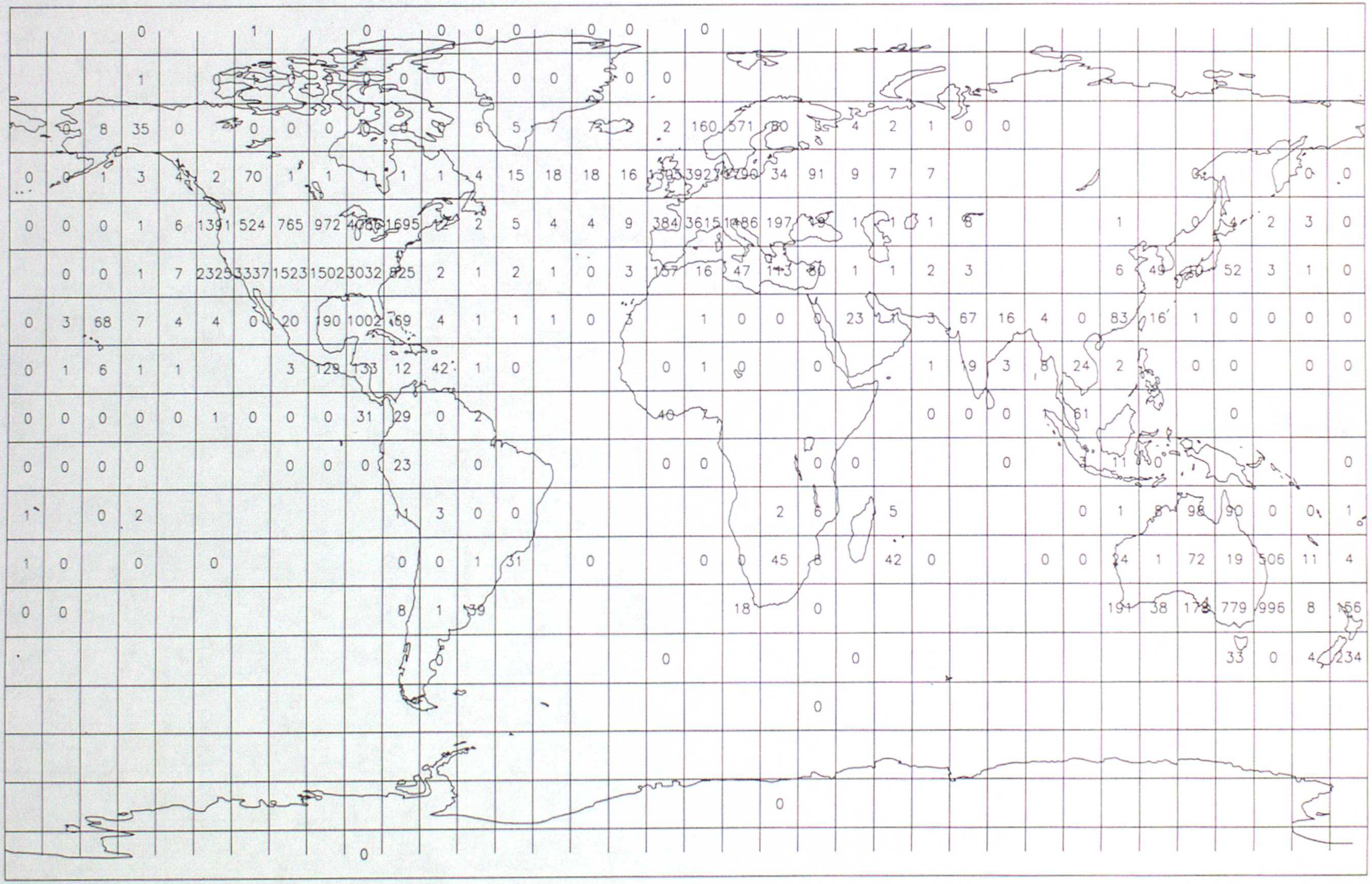
18 21 20 64 118 85 48 48 23 12 35 70 125 195 213 228 244 134 365 377 66 43 24 16 1 7 9 1 1 1 3 2 1 0 14 21
23 60 65 69 95 488 1061 1549 1736 1468 778 181 95 119 124 116 130 114 301 212 90 21 13 23 52 2 0 0 1 2 0 4 67 70 111 51
6 10 4 27 193 462 2150 3036 2750 2775 695 46 45 65 62 22 22 14 19 26 21 31 11 16 46 54 0 0 1 11 10 90 93 83 44
3 60 257 206 43 14 31 120 188 538 799 77 48 38 14 7 2 1 14 8 8 1 13 8 12 30 50 2 1 15 11 16 14 4 14 16
1 7 9 16 13 0 12 40 121 23 26 22 3 1 3 0 4 11 6 12 3 5 9 1 19 2 33 2 3 4 2 3 2
7 11 17 15 7 0 0 0 1 32 12 10 0 7 3 0 5 7 4 13 9 1 1 5 1 3 10 28 8 3 0 3 1 0 1
33 38 27 13 0 2 16 8 16 1 4 0 0 0 2 2 16 4 7 0 5 1 2 0 29 41 15 10 0 0 16
50 22 11 1 4 6 12 11 1 0 0 2 2 11 2 5 11 4 1 0 0 3 38 67 64 20 2 15 48
36 17 2 0 1 0 0 3 5 14 12 0 4 9 9 8 6 4 4 3 3 3 26 49 95 103 98 109 79
12 4 2 3 11 0 0 1 4 3 4 3 3 4 4 3 4 30 53 75 304 201 141 55
3 0 0 0 0 0 1 1 0 0 0 1 2 2 1 1 0 3 8 41 21
1 2 1 0 1 1 1 1 1 0 0 0
0 1 1 1 1 1 1 1 0
0 0

MEAN DAILY COUNT OF AIRCRAFT 1000 – 301 HPA
MAY 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 42386

FIGURE 3B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1 0 0 0 0 0 0
0 8 35 0 0 0 0 0 0 0 6 5 7 7 2 2 160 571 80 5 4 2 1 0 0
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0 3 68 7 4 4 0 20 190 1002 169 4 1 1 1 0 3 1 0 0 0 23 1 3 67 16 4 0 83 16 1 0 0 0 0
0 1 6 1 1 3 129 133 12 42 1 0 0 1 0 0 1 19 3 8 24 2 0 0 0 0
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1 0 2 11 3 0 0 2 6 5 0 1 8 98 90 0 0 1
1 0 0 0 0 0 1 31 0 0 0 45 8 42 0 0 0 24 1 72 19 506 11 4
0 0 8 1 39 18 0 191 38 178 779 996 8 156
0 0 0 33 0 4 234
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0
0

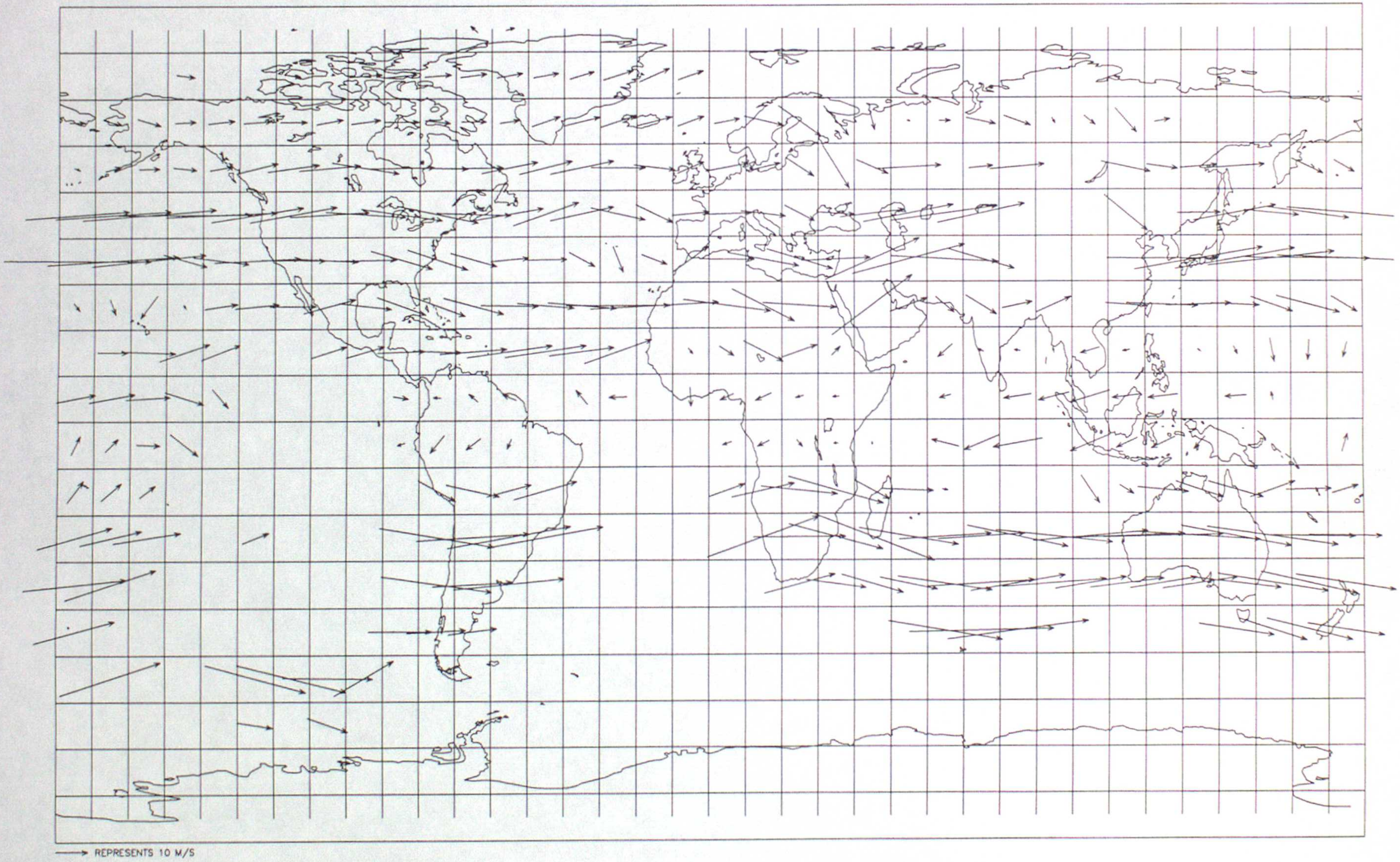
AIRCRAFT MEAN WINDS BETWEEN 300 AND 150 HPA

FIGURE 4A

MAY 2000

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



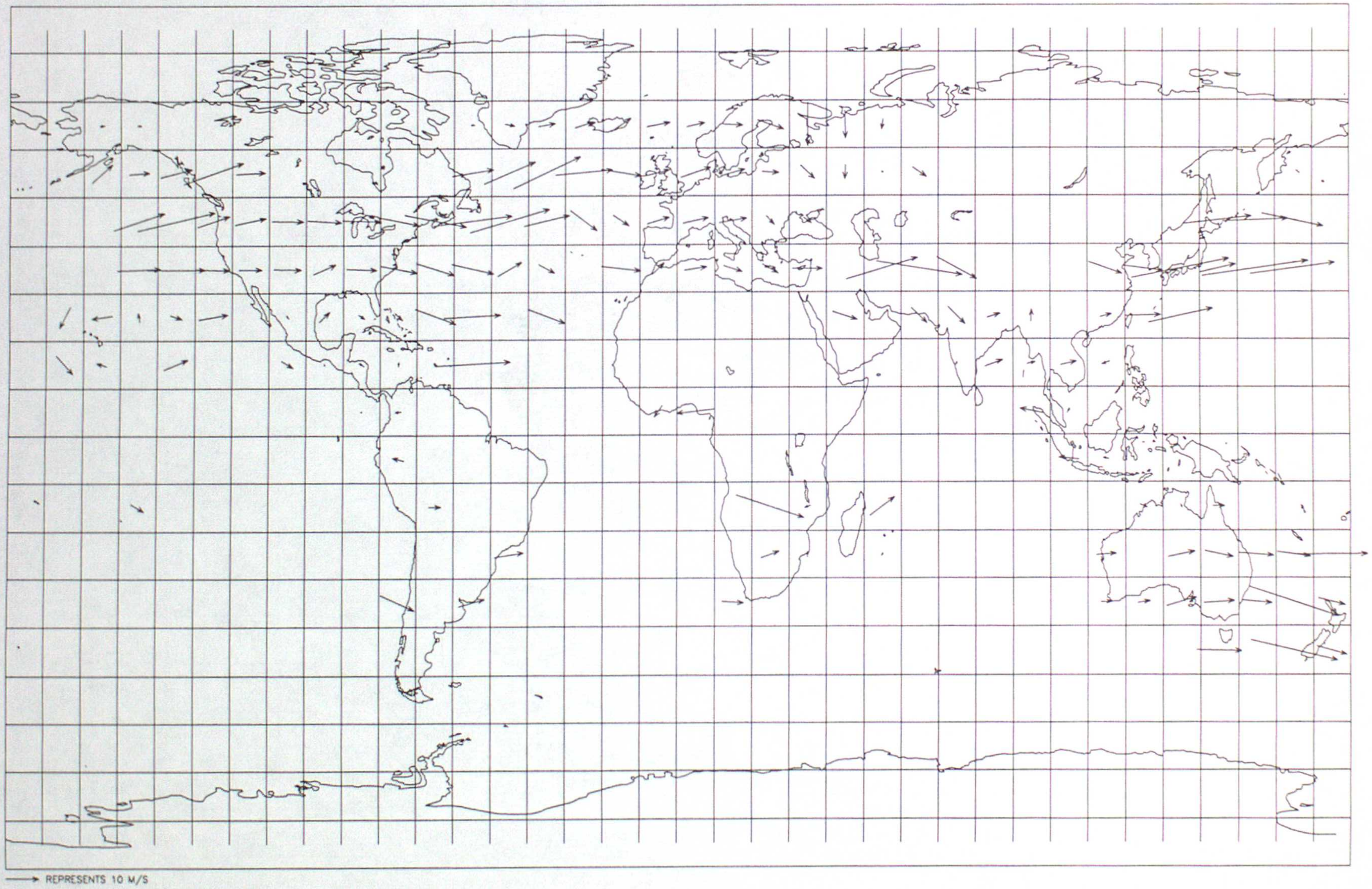
AIRCRAFT MEAN WINDS BETWEEN 1000 AND 301 HPA

FIGURE 4B

MAY 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



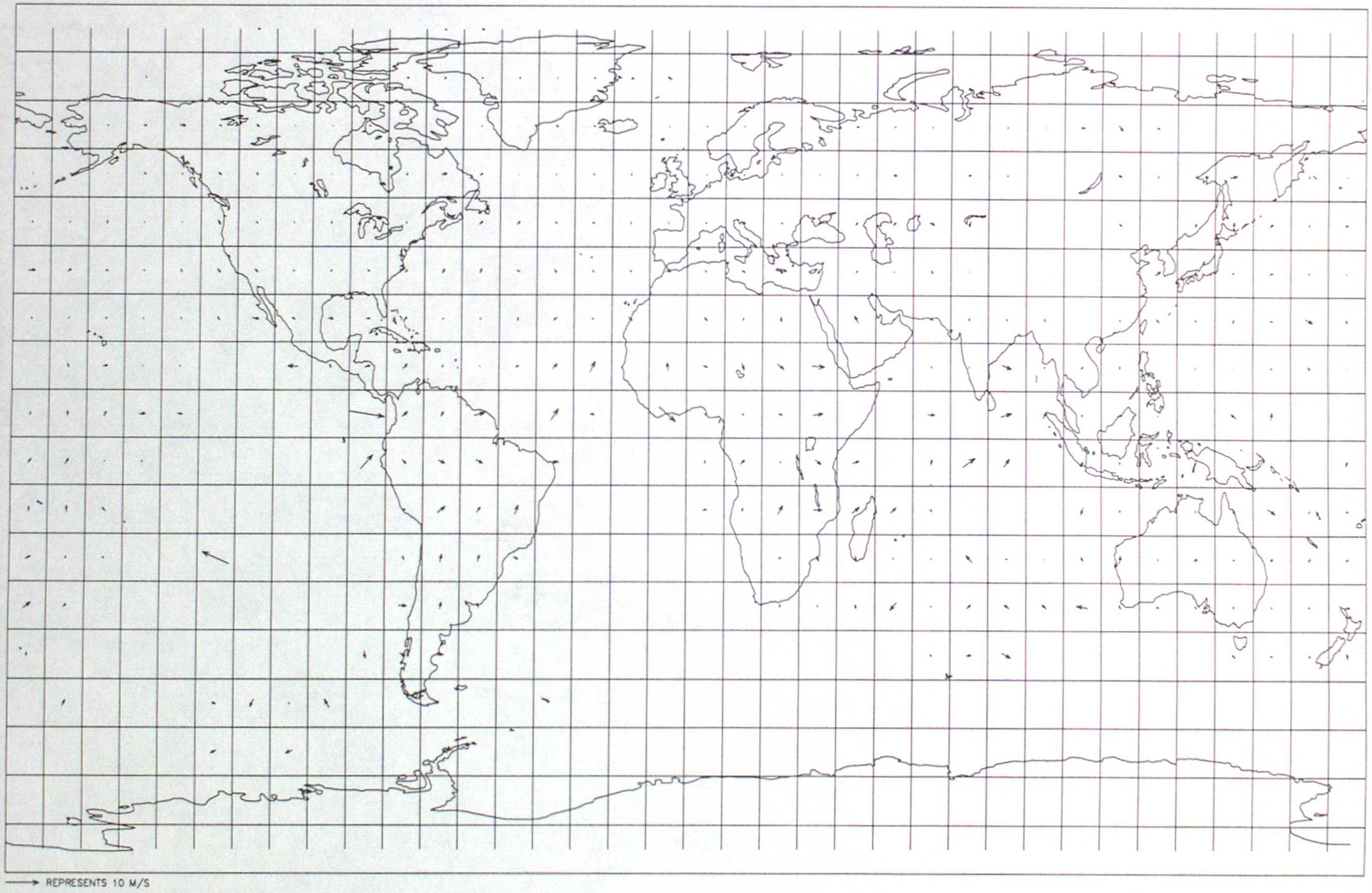
AIRCRAFT MEAN O–B WINDS BETWEEN 300 AND 150 HPA

FIGURE 5A

MAY 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



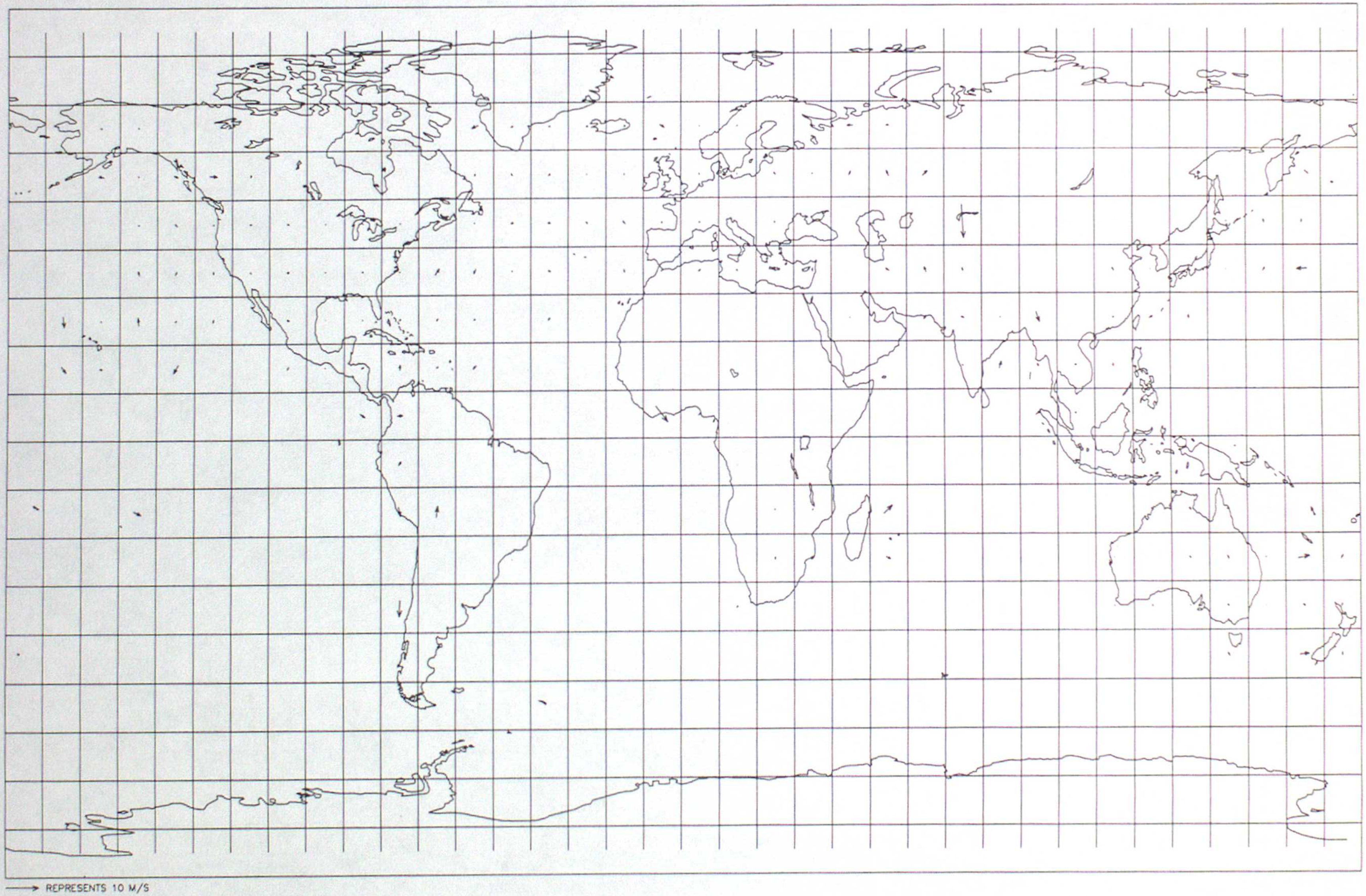
AIRCRAFT MEAN O-B WINDS BETWEEN 1000 AND 301 HPA

FIGURE 5B

MAY 2000

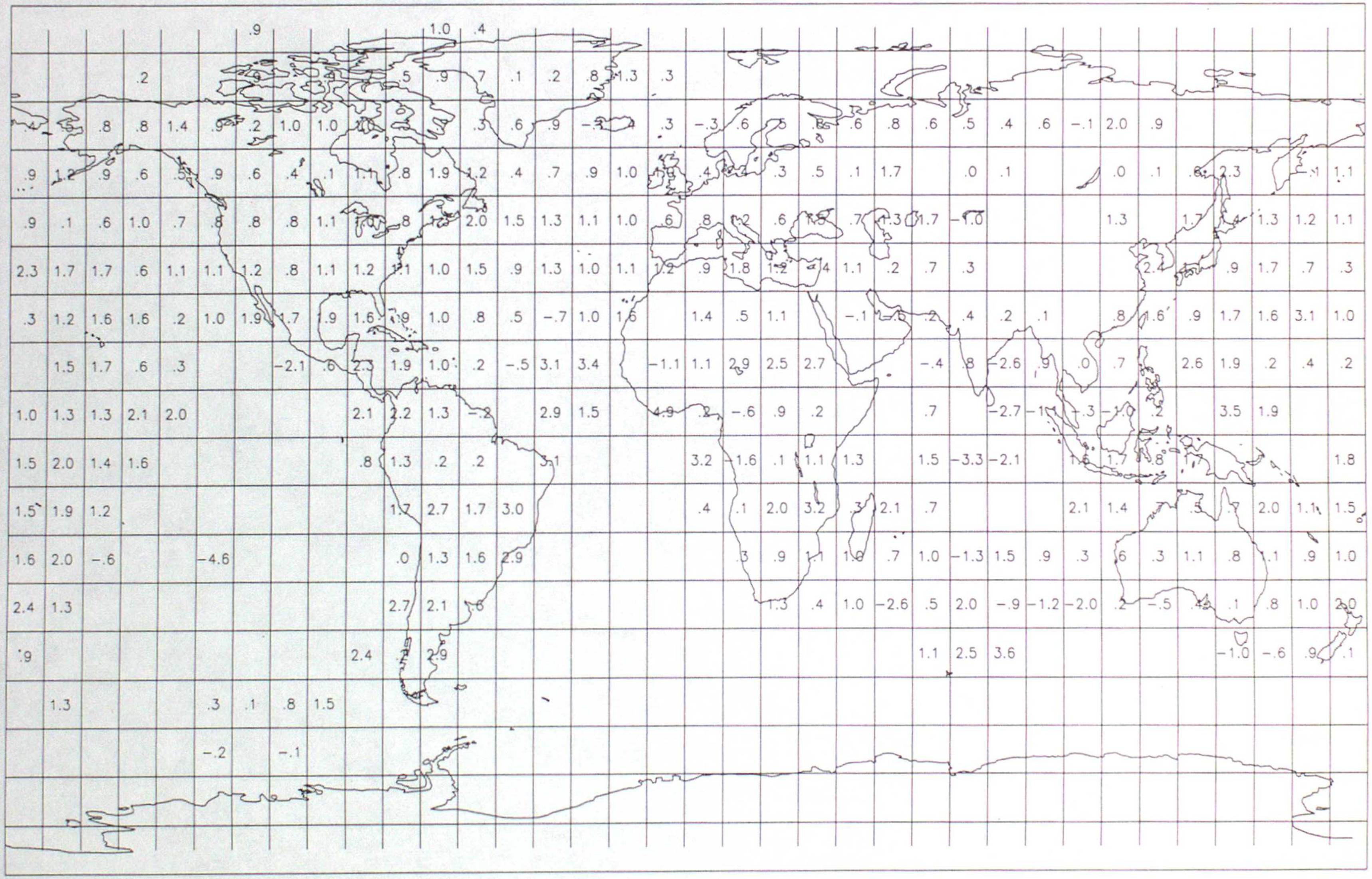
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



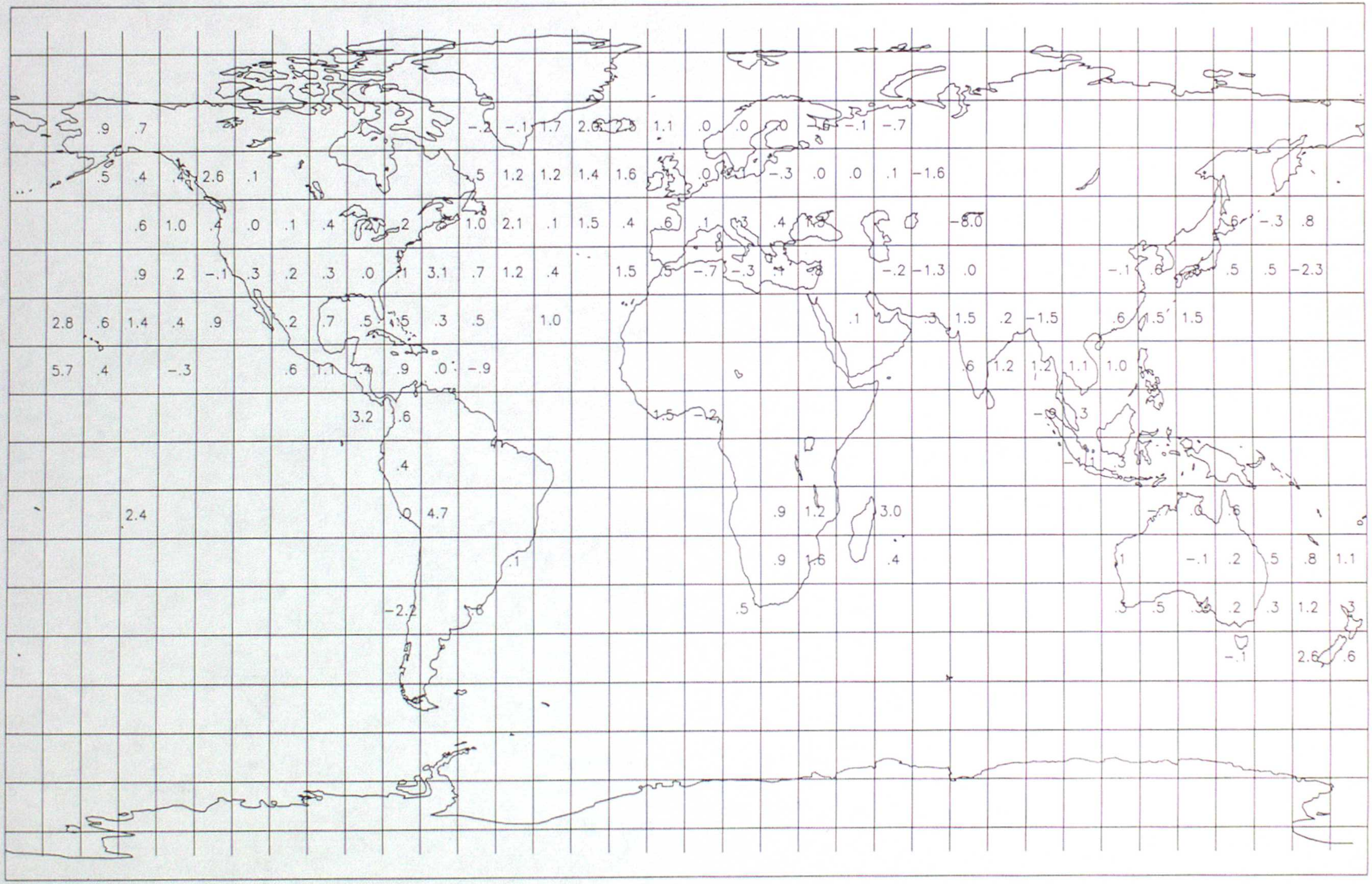
AIRCRAFT : MEAN O–B SPEEDS (M/S) 300 – 150 HPA
MAY 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 6A


.9 1.0 .4
.2 .5 .9 .7 .1 .2 .8 1.3 .3
.4 .5 .8 .8 1.4 .9 .2 1.0 1.0 .3 .6 .9 -.3 .3 -.3 .6 .5 .6 .6 .8 .6 .5 .4 .6 -.1 2.0 .9
.9 1.2 .9 .6 .5 .9 .6 .4 .1 1.1 .8 1.9 1.2 .4 .7 .9 1.0 .9 .4 .3 .5 .1 1.7 .0 .1 .0 .1 .6 2.3 .1 1.1
.9 .1 .6 1.0 .7 .8 .8 .8 1.1 1.0 .8 .5 2.0 1.5 1.3 1.1 1.0 .6 .8 1.2 .6 1.5 .7 1.3 1.7 -1.0 1.3 1.7 .4 1.3 1.2 1.1
2.3 1.7 1.7 .6 1.1 1.1 1.2 .8 1.1 1.2 1.1 1.0 1.5 .9 1.3 1.0 1.1 1.2 .9 1.8 1.2 .4 1.1 .2 .7 .3 2.4 .9 1.7 .7 .3
.3 1.2 1.6 1.6 .2 1.0 1.9 1.7 .9 1.6 .9 1.0 .8 .5 -.7 1.0 1.6 1.4 .5 1.1 -.1 .5 .2 .4 .2 .1 .8 1.6 .9 1.7 1.6 3.1 1.0
1.5 1.7 .6 .3 -2.1 .6 2.3 1.9 1.0 .2 -.5 3.1 3.4 -1.1 1.1 2.9 2.5 2.7 -.4 .8 -2.6 .9 .0 .7 2.6 1.9 .2 .4 .2
1.0 1.3 1.3 2.1 2.0 2.1 2.2 1.3 -.2 2.9 1.5 4.9 .2 -.6 .9 .2 .7 -2.7 -1.1 -.3 -1.0 .2 3.5 1.9
1.5 2.0 1.4 1.6 .8 1.3 .2 .2 3.1 3.2 1.6 .1 1.1 1.3 1.5 -3.3 -2.1 1.6 1.7 .8 1.7 1.8
1.5 1.9 1.2 1.7 2.7 1.7 3.0 .4 .1 2.0 3.2 .3 2.1 .7 2.1 1.4 .7 .5 .7 2.0 1.1 1.5
1.6 2.0 -.6 -4.6 .0 1.3 1.6 2.9 .3 .9 1.1 1.0 .7 1.0 -1.3 1.5 .9 .3 .6 .3 1.1 .8 .1 .9 1.0
2.4 1.3 2.7 2.1 .6 1.3 .4 1.0 -2.6 .5 2.0 -.9 -1.2 -2.0 .2 -.5 .4 .1 .8 1.0 2.0
.9 2.4 .2 2.9 1.1 2.5 3.6 -1.0 -.6 .9 .1
1.3 .3 .1 .8 1.5
-.2 -.1

AIRCRAFT : MEAN O-B SPEEDS (M/S) 1000 - 301 HPA
MAY 2000
OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 6B


.9 .7 -.2 -.1 1.7 2.6 2.5 1.1 .0 .0 .0 -.6 -.1 -.7
.5 .4 .4 2.6 .1 .5 1.2 1.2 1.4 1.6 .0 .1 -.3 .0 .0 .1 -1.6
.6 1.0 .4 .0 .1 .4 .2 .2 1.0 2.1 .1 1.5 .4 .6 .1 .3 .4 1.5 -8.0 .6 -.3 .8
.9 .2 -.1 .3 .2 .3 .0 .1 3.1 .7 1.2 .4 1.5 .5 -.7 -.3 .8 -.2 -1.3 .0 -.1 .6 .5 .5 -2.3
2.8 .6 1.4 .4 .9 .2 .7 .5 .5 .3 .5 1.0 .1 .3 1.5 .2 -1.5 .6 1.5 1.5
5.7 .4 -.3 .6 1.1 .4 .9 .0 -.9 .6 1.2 1.2 1.1 1.0
3.2 .6 1.5 -.2 -.9 .3
.4 -.1 .3
2.4 .0 4.7 .9 1.2 3.0 .0 .6
.1 .9 1.6 .4 .1 -.1 .2 .5 .8 1.1
-2.2 .6 .5 .3 .5 .3 .2 .3 1.2 .3
-.1 2.6 .6

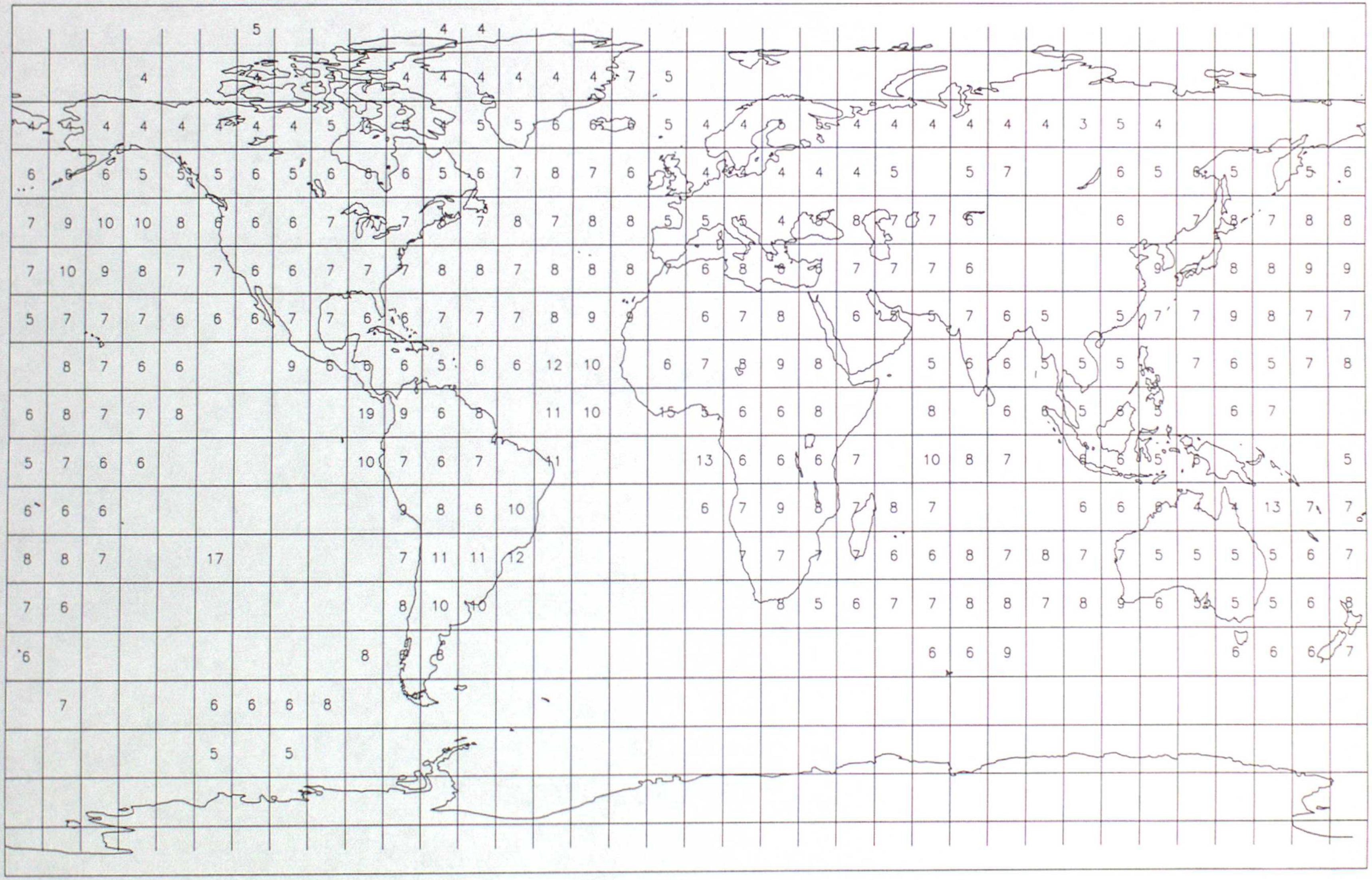
AIRCRAFT : RMS O-B VECTOR (M/S) 300 - 150 HPA

FIGURE 7A

MAY 2000

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT



AIRCRAFT : RMS O-B VECTOR (M/S) 1000 - 301 HPA

MAY 2000

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 7B

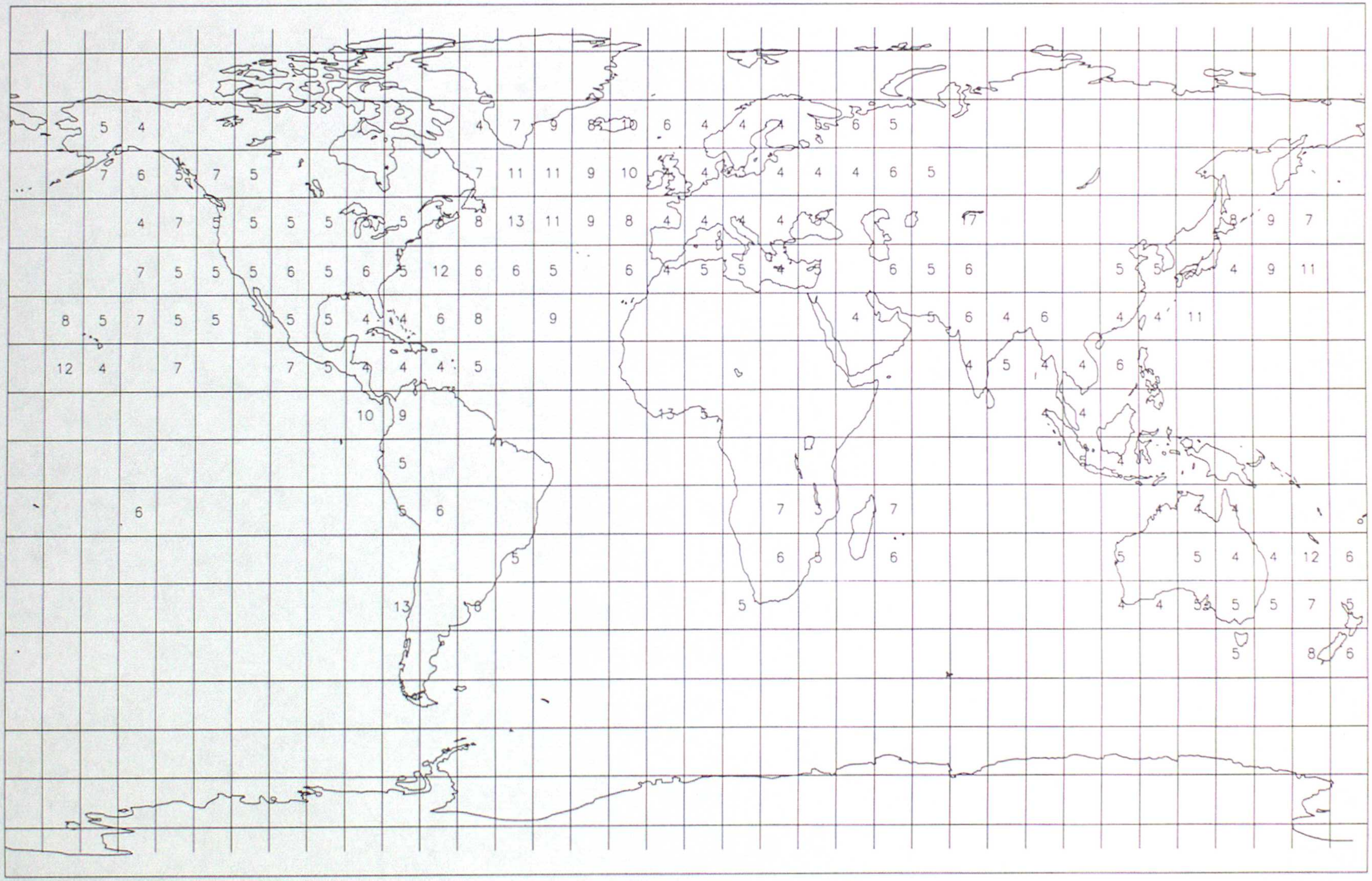

5 4 4 7 9 8 10 6 4 4 4 5 6 5
7 6 5 7 5 7 11 11 9 10 4 4 4 4 6 5
4 7 5 5 5 5 5 8 13 11 9 8 4 4 4 4 7 8 9 7
7 5 5 5 6 5 6 5 12 6 6 5 6 4 5 5 4 6 5 6 5 5 4 9 11
8 5 7 5 5 5 5 4 4 6 8 9 4 5 6 4 6 4 4 11
12 4 7 7 5 4 4 4 5 4 5 4 4 6
10 9 13 5 4
5 4
6 5 6 7 5 7 4 4
5 6 5 6 5 5 4 4 12 6
13 8 5 4 4 5 5 5 7 5
5 8 6

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
32098	00	Z	100	49/ 143	28	0	42.0	116.4	123.8	4
42101	00	Z	250	30/ 76	20	0	75.5	-24.3	79.3	7
42314	00	Z	150	27/ 95	21	0	104.5	55.1	118.1	5
42339	00	Z	150	26/ 73	23	0	78.4	-56.1	96.4	5
42361	00	Z	200	26/ 78	17	0	87.0	20.4	89.4	5
42369	00	Z	100	27/ 81	11	0	107.5	74.6	130.9	5
42369	12	Z	150	27/ 81	12	1	82.2	111.4	138.5	5
42397	00	Z	100	27/ 88	11	0	118.7	-38.1	124.6	6
42647	12	Z	100	23/ 73	11	1	90.7	128.9	157.6	5
42867	12	Z	100	21/ 79	14	0	93.1	124.5	155.5	4
43003	12	Z	150	19/ 73	12	2	76.0	178.7	194.2	6
43128	00	Z	150	17/ 78	26	0	81.7	-72.6	109.3	5
43128	12	Z	100	17/ 78	15	0	102.8	92.5	138.3	4
43279	12	Z	150	13/ 80	18	0	101.1	88.8	134.5	7
43295	00	Z	100	13/ 78	26	1	97.2	133.8	165.4	7
43311	12	Z	200	11/ 73	20	0	73.1	81.7	109.6	4
43369	12	Z	100	8/ 73	18	0	90.8	135.4	163.0	5
44212	00	Z	100	50/ 92	14	1	81.3	127.5	151.2	4
52889	12	Z	1000	36/ 104	29	0	19.5	38.7	43.3	4
53463	12	Z	100	41/ 112	10	0	96.7	103.1	141.3	5
53845	00	Z	1000	37/ 109	30	0	12.6	43.4	45.2	4
57447	00	Z	100	30/ 109	29	0	58.4	140.7	152.3	5
58968	00	Z	250	25/ 122	29	0	35.3	-59.9	69.5	5
84628	12	Z	850	-12/ -77	24	0	6.2	-69.9	70.2	8
91366	00	Z	100	9/ 168	19	2	43.2	153.6	159.5	4
96163	00	Z	250	-1/ 100	11	4	114.4	19.6	116.1	6
97180	00	Z	150	-5/ 120	13	0	113.9	1.2	113.9	6

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – MAY 2000

FIGURE 8

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1100

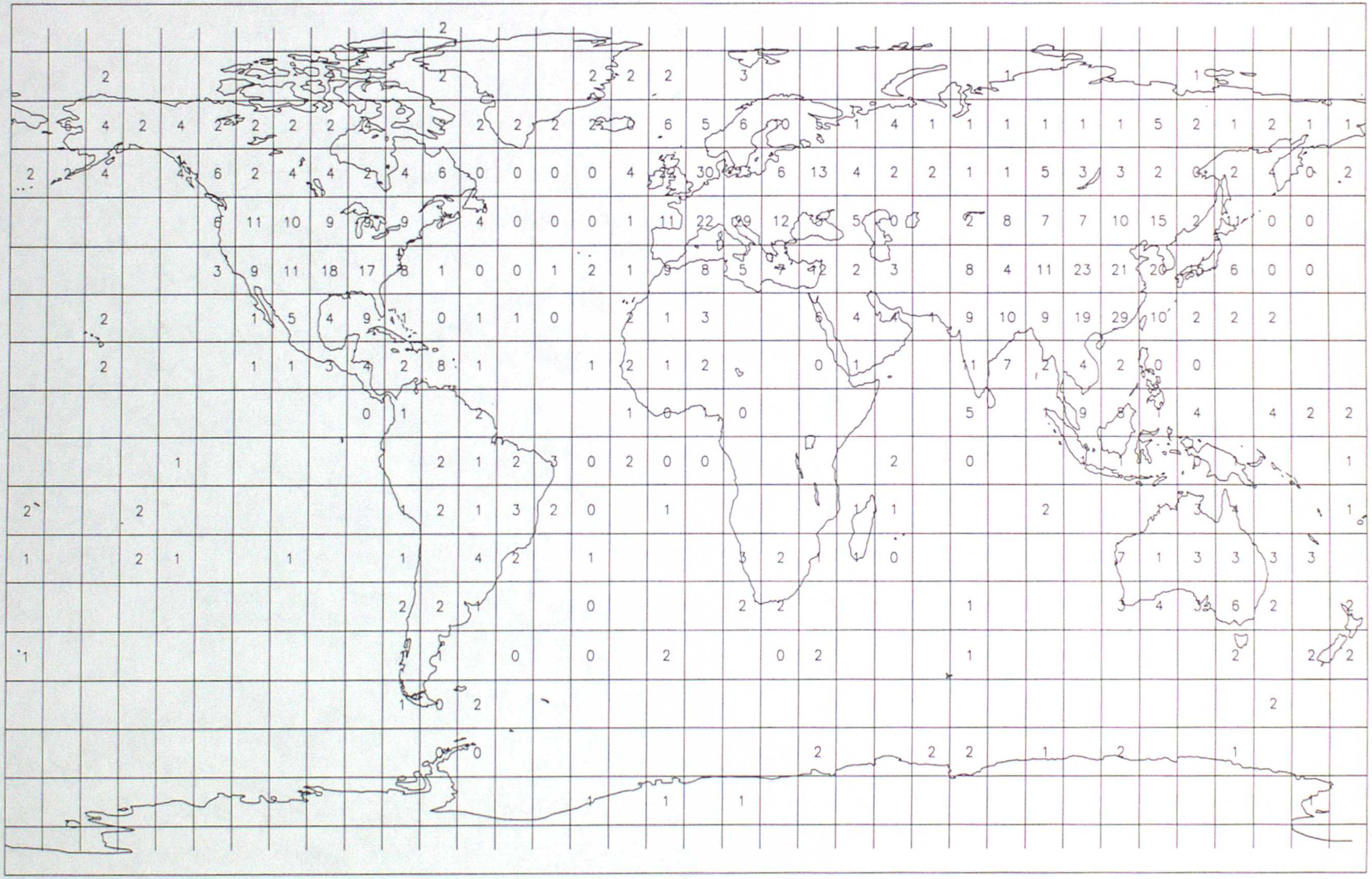

2
2 2 2 2 2 3 1 1
6 4 2 4 2 2 2 2 4 2 2 2 2 0 6 5 6 10 5 1 4 1 1 1 1 1 1 5 2 1 2 1 1
2 2 4 4 6 2 4 4 2 4 6 0 0 0 0 4 2 30 2 6 13 4 2 2 1 1 5 3 3 2 0 2 4 0 2
6 11 10 9 9 9 4 0 0 0 1 11 22 29 12 5 5 0 2 8 7 7 10 15 2 11 0 0
3 9 11 18 17 8 1 0 0 1 2 1 9 8 5 7 12 2 3 8 4 11 23 21 20 15 6 0 0
2 1 5 4 9 1 0 1 1 0 2 1 3 6 4 4 1 9 10 9 19 29 10 2 2 2
2 1 1 3 4 2 8 1 1 2 1 2 0 1 11 7 2 4 2 0 0
0 1 2 1 0 0 5 1 9 8 1 4 4 2 2
1 2 1 2 3 0 2 0 0 2 0 1 1 1
2 2 1 2 1 3 2 0 1 1 1 2 1 3 4 1
1 2 1 1 1 4 2 1 3 2 1 1 0 7 1 3 3 3 3
2 2 1 0 2 2 1 3 4 3 3 6 2 2
1 1 0 0 2 0 2 1 2 2 2
1 0 2 2
0 2 2 2 1 2 1
1 1 1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
48855	00	V	100	16/ 108	29	0	100	-12.8	-5.8	17.9	1
83612	12	V	200	-20/ -55	24	0	20	13.9	0.0	21.3	2

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – MAY 2000

FIGURE 9

ALL HOURS
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1271

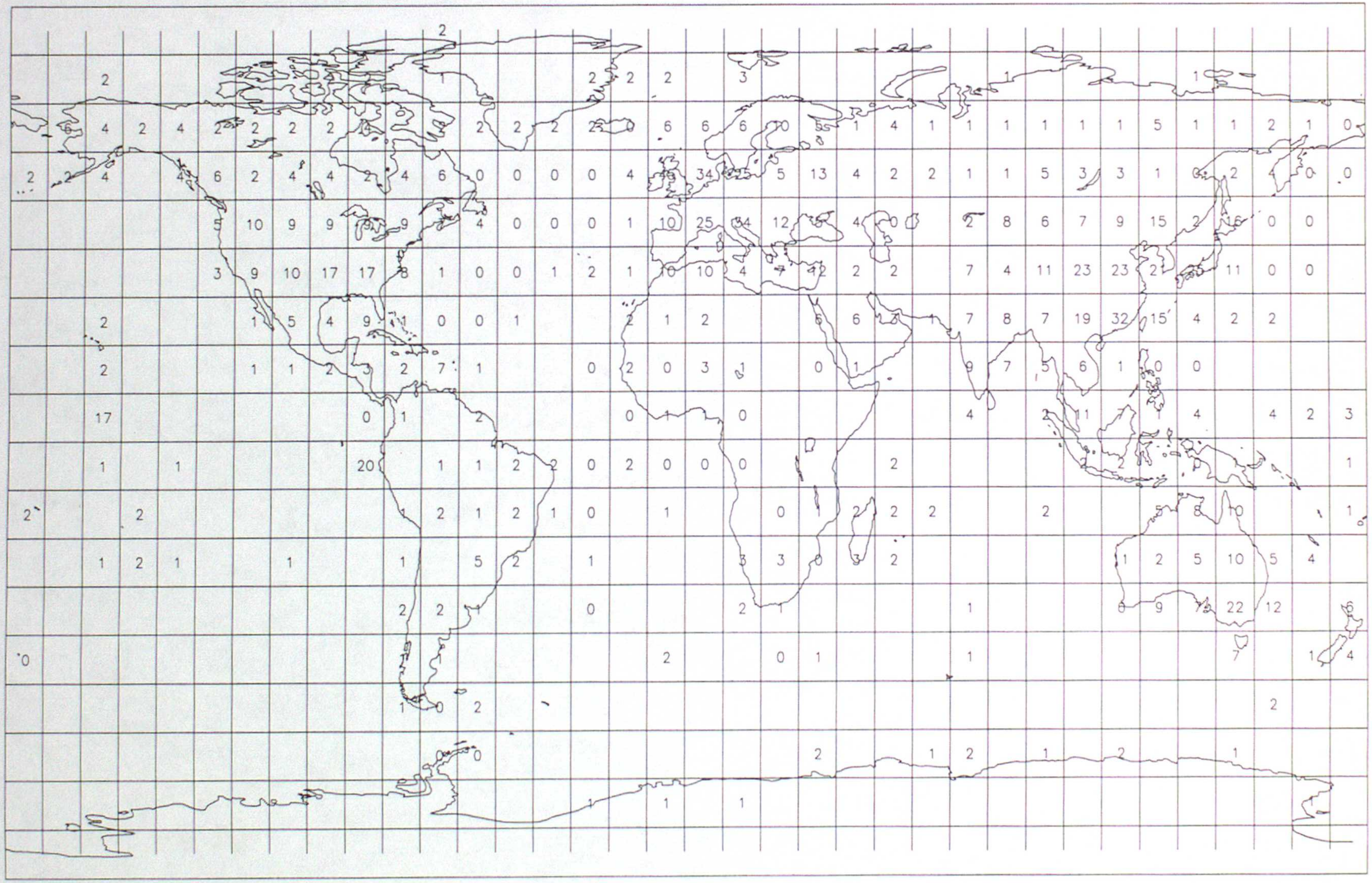

2
2 1 2 2 2 3 1 1
6 4 2 4 2 2 2 2 6 2 2 2 25 0 6 6 6 10 55 1 4 1 1 1 1 1 1 5 1 1 2 1 0
2 2 4 4 6 2 4 4 2 4 6 0 0 0 0 4 5 34 25 5 13 4 2 2 1 1 5 3 3 1 0 2 4 0 0
5 10 9 9 9 9 4 0 0 0 1 10 25 34 12 15 4 0 2 8 6 7 9 15 2 16 0 0
3 9 10 17 17 8 1 0 0 1 2 1 10 10 4 7 12 2 2 7 4 11 23 23 21 25 11 0 0
2 1 5 4 9 1 0 0 1 2 1 2 5 6 3 1 7 8 7 19 32 15 4 2 2
2 1 1 2 3 2 7 1 0 2 0 3 1 0 1 9 7 5 6 1 0 0
17 0 1 2 0 1 0 4 2 11 1 4 4 2 3
1 1 20 1 1 2 2 0 2 0 0 0 2 2 1
2 2 1 2 1 2 1 0 1 0 1 2 2 2 2 5 8 10 1
1 2 1 1 1 5 2 1 3 3 0 3 2 1 2 5 10 5 4
2 2 1 0 2 1 1 0 9 7 22 12 6
0 2 0 1 1 7 1 4
1 0 2 2
0 2 1 2 1 2 1
1 1 1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA

:NUM OBS ≥ 5, and
ABSOLUTE BIAS $\geq 10°$, with
SD $< 30°$, and
MAX SPREAD $< 10°$

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
08594	12	DD	17/ -23	10	-11.3	5.2	12.6
17280	00	DD	38/ 40	21	-11.8	6.5	11.6
17280	12	DD	38/ 40	19	-13.2	5.5	8.9
38353	00	DD	43/ 75	12	12.1	7.4	12.7
42339	12	DD	26/ 73	19	14.3	9.8	27.8
43003	00	DD	19/ 73	8	10.8	5.5	18.8
43041	00	DD	19/ 82	12	10.9	7.2	21.1
62337	00	DD	31/ 34	29	-20.2	4.3	10.0
62337	12	DD	31/ 34	28	-20.0	7.9	12.6
78486	12	DD	18/ -70	20	11.5	5.6	16.8

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: MAY 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES-8, GOES-10, METEOSAT-5, METEOSAT-7, GMS-5, INSAT.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

:Mean wind

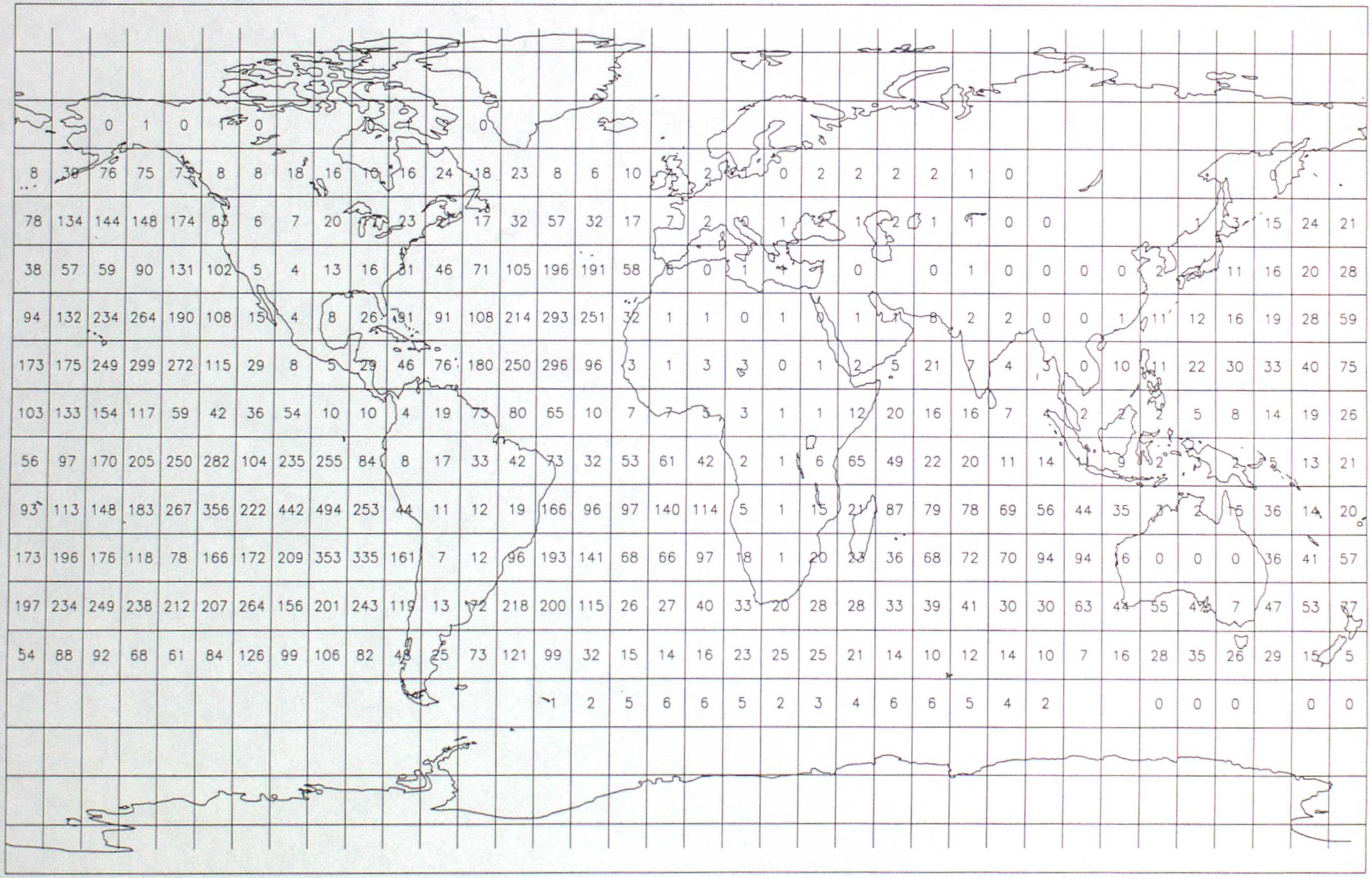
:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
MAY 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 23936



		0	1	0	1	0				1		0																							
8	38	76	75	73	8	8	18	16	10	16	24	18	23	8	6	10	7	2	1	0	2	2	2	2	1	0									
78	134	144	148	174	83	6	7	20	[illegible]	23	21	17	32	57	32	17	7	2	0	1	2	1	2	1	1	0	0				1	3	15	24	21
38	57	59	90	131	102	5	4	13	16	31	46	71	105	196	191	58	6	0	1	1	1	0		0	1	0	0	0	0	2		11	16	20	28
94	132	234	264	190	108	15	4	8	26	91	91	108	214	293	251	32	1	1	0	1	0	1	1	8	2	2	0	0	1	11	12	16	19	28	59
173	175	249	299	272	115	29	8	5	29	46	76	180	250	296	96	3	1	3	3	0	1	2	5	21	7	4	3	0	10	11	22	30	33	40	75
103	133	154	117	59	42	36	54	10	10	4	19	73	80	65	10	7	7	3	3	1	1	12	20	16	16	7	4	2	2	2	5	8	14	19	26
56	97	170	205	250	282	104	235	255	84	8	17	33	42	73	32	53	61	42	2	1	6	65	49	22	20	11	14	1	9	2	3	2	5	13	21
93	113	148	183	267	356	222	442	494	253	44	11	12	19	166	96	97	140	114	5	1	15	21	87	79	78	69	56	44	35	3	2	15	36	14	20
173	196	176	118	78	166	172	209	353	335	161	7	12	96	193	141	68	66	97	18	1	20	23	36	68	72	70	94	94	16	0	0	0	36	41	57
197	234	249	238	212	207	264	156	201	243	119	13	72	218	200	115	26	27	40	33	20	28	28	33	39	41	30	30	63	44	55	45	7	47	53	37
54	88	92	68	61	84	126	99	106	82	48	25	73	121	99	32	15	14	16	23	25	25	21	14	10	12	14	10	7	16	28	35	26	29	15	5
														1	2	5	6	6	5	2	3	4	6	6	5	4	2			0	0	0		0	0

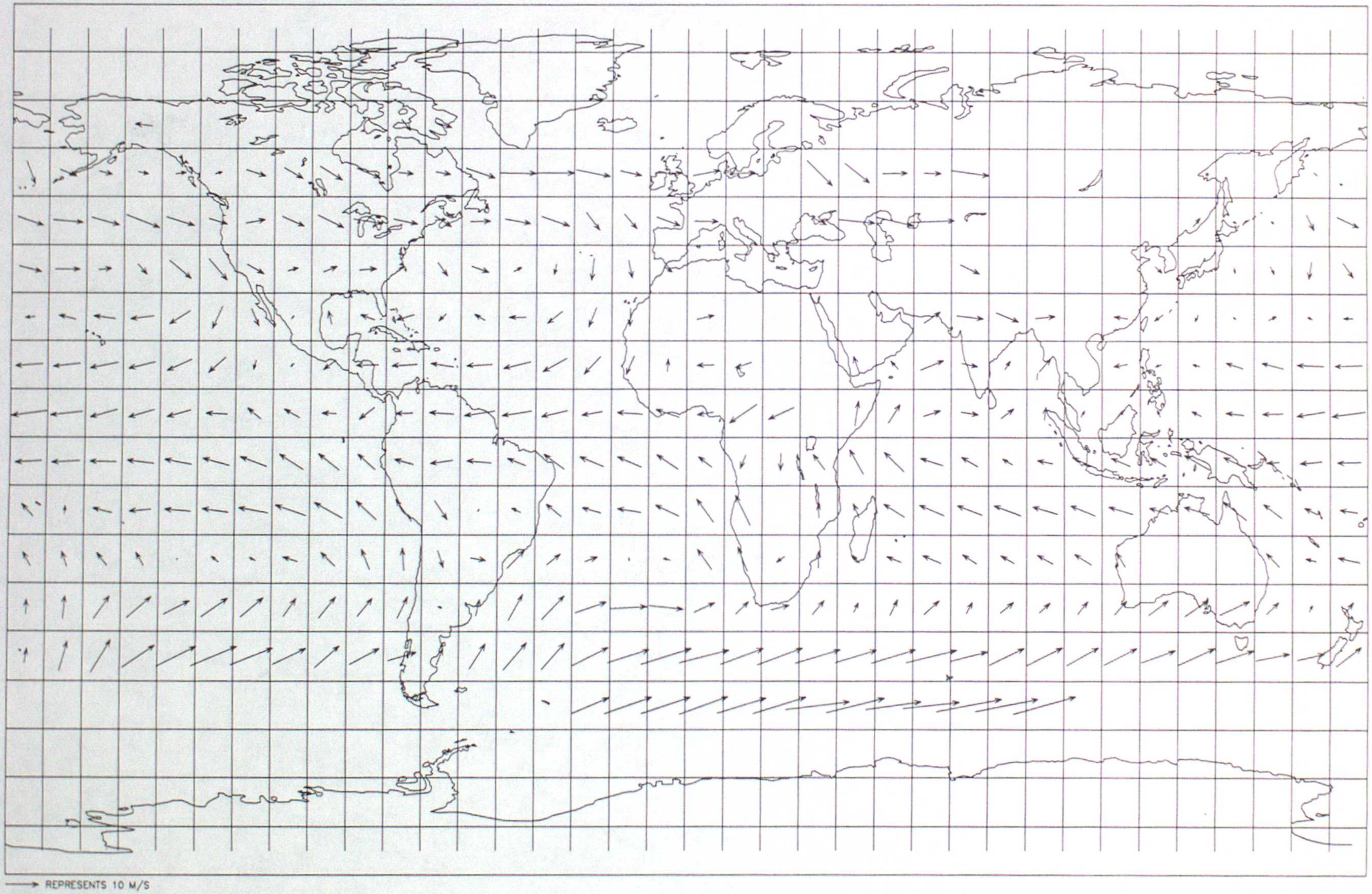
SATOB METEOSAT W/V VECTOR MEAN WINDS BETWEEN 701–1000 HPA

FIGURE 11

MAY 2000

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 10 M/S

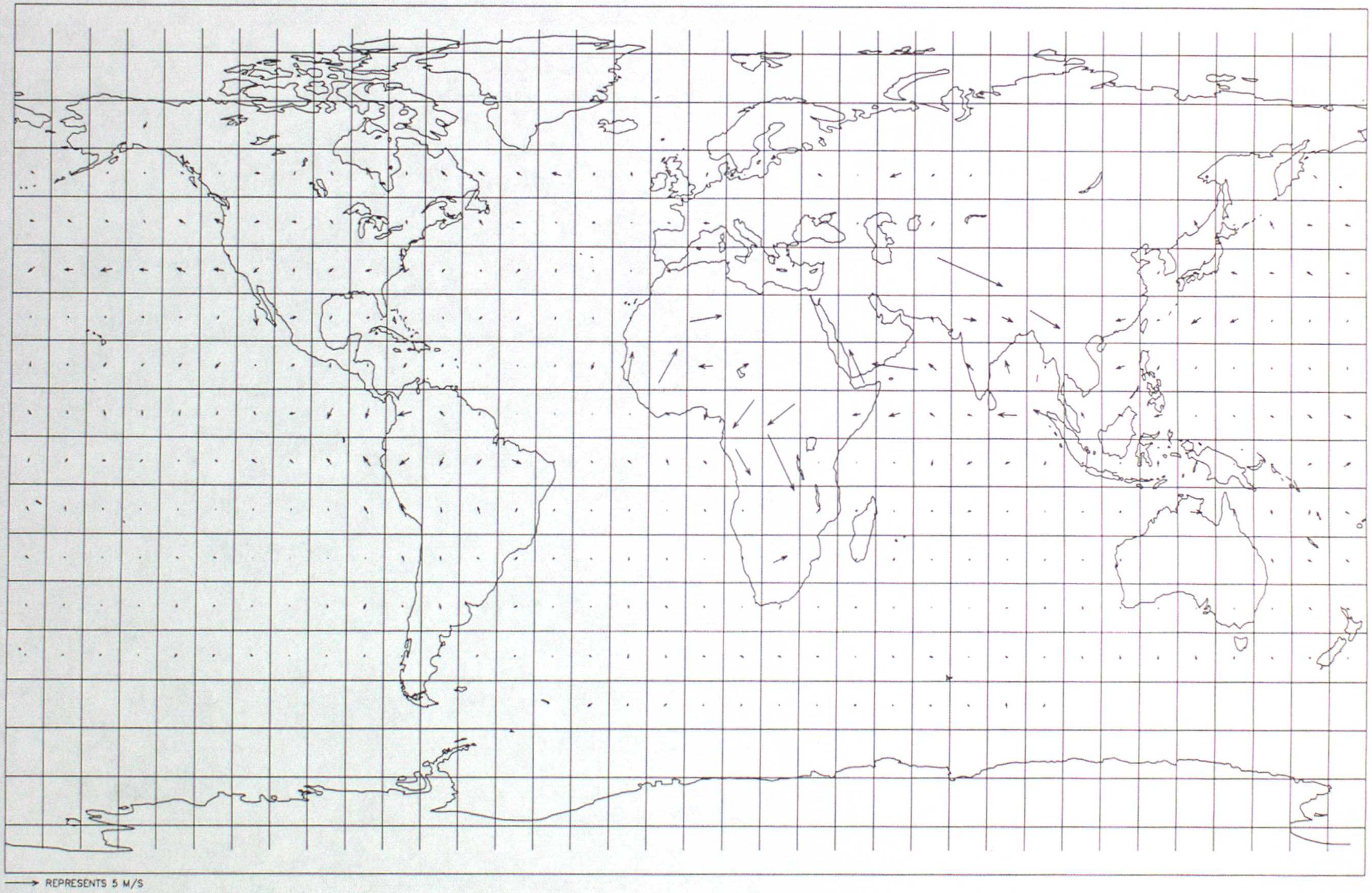
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701–1000 HPA

MAY 2000

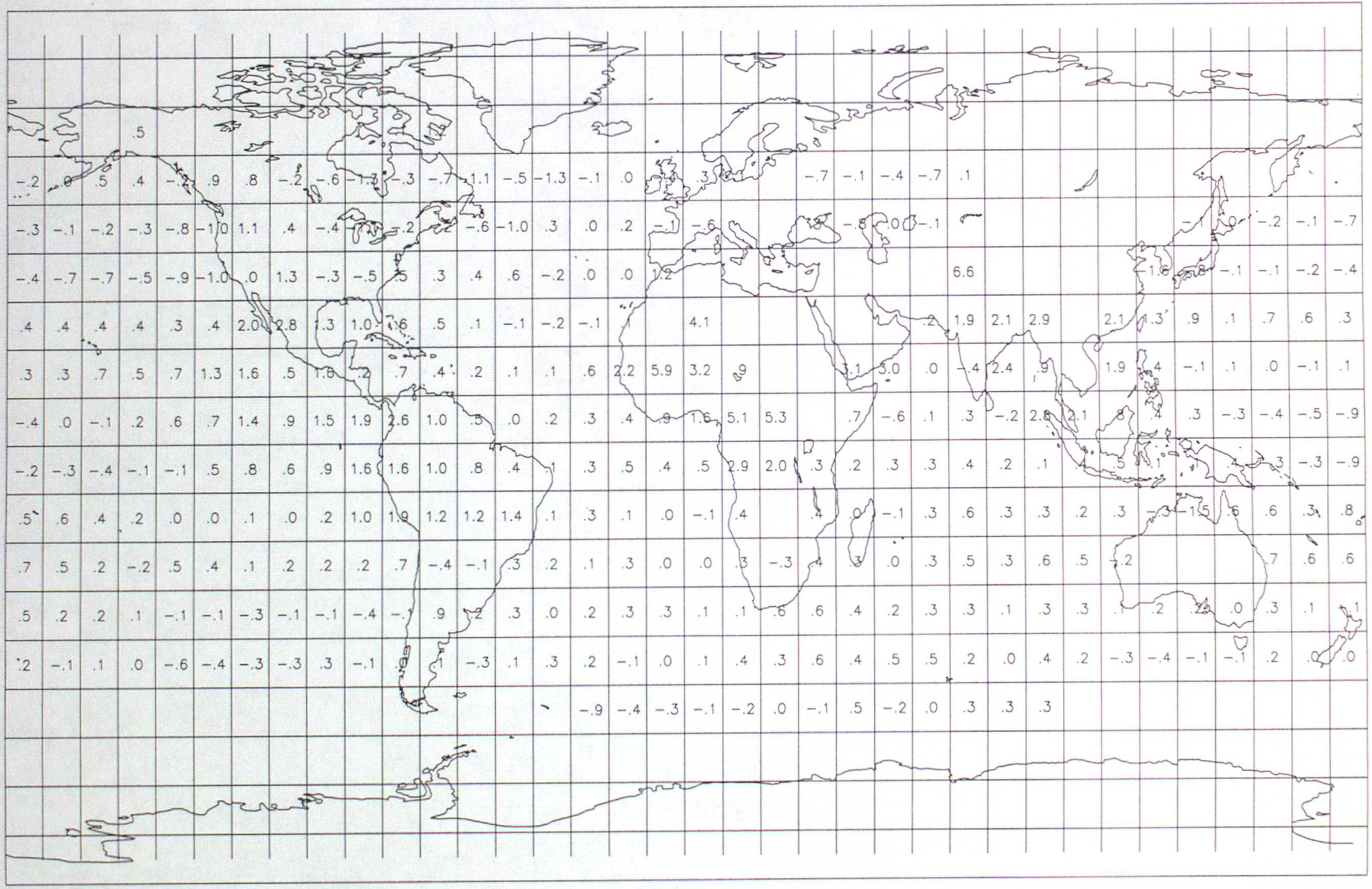
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

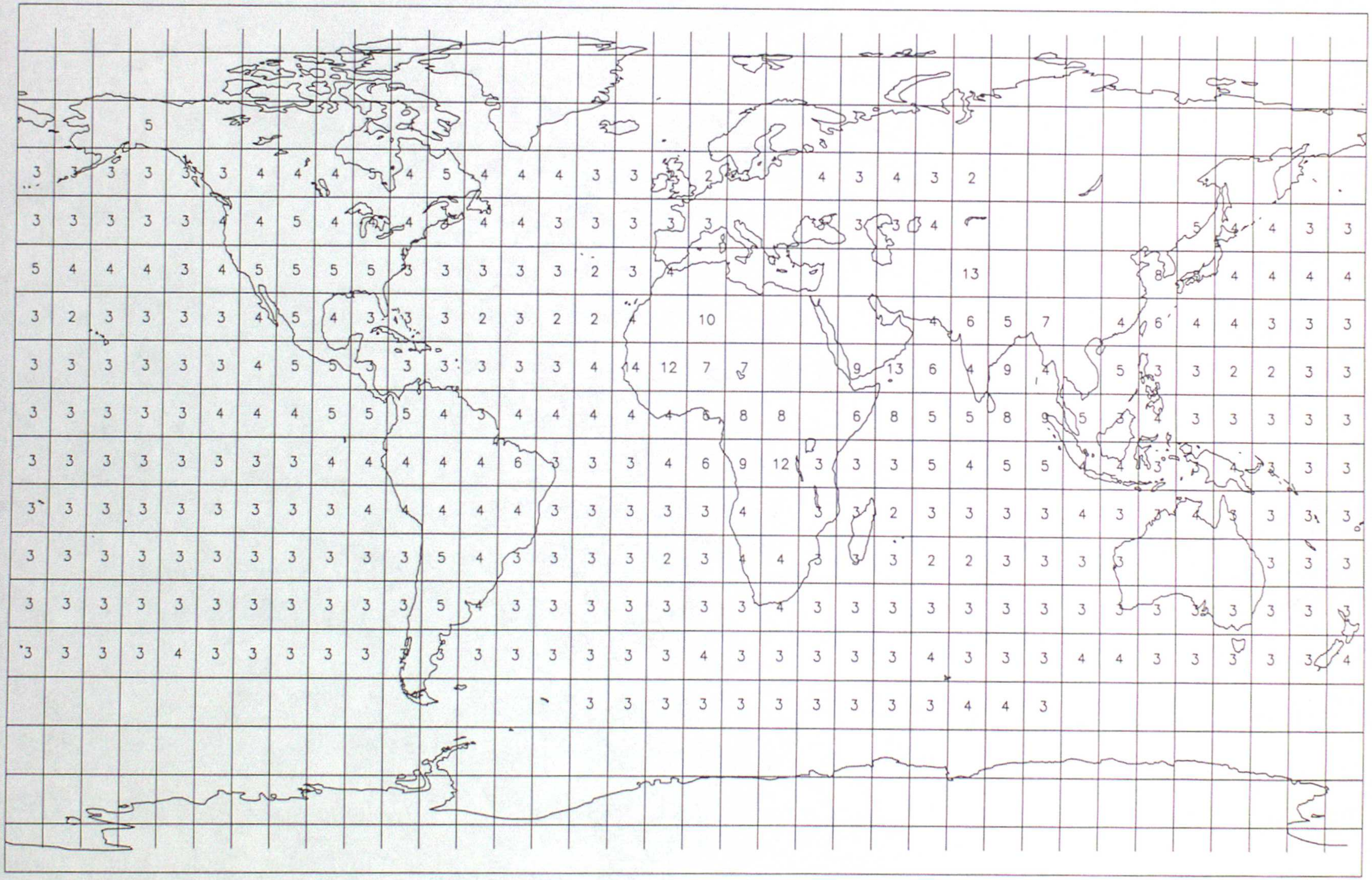
FIGURE 12


REPRESENTS 5 M/S

SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
MAY 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

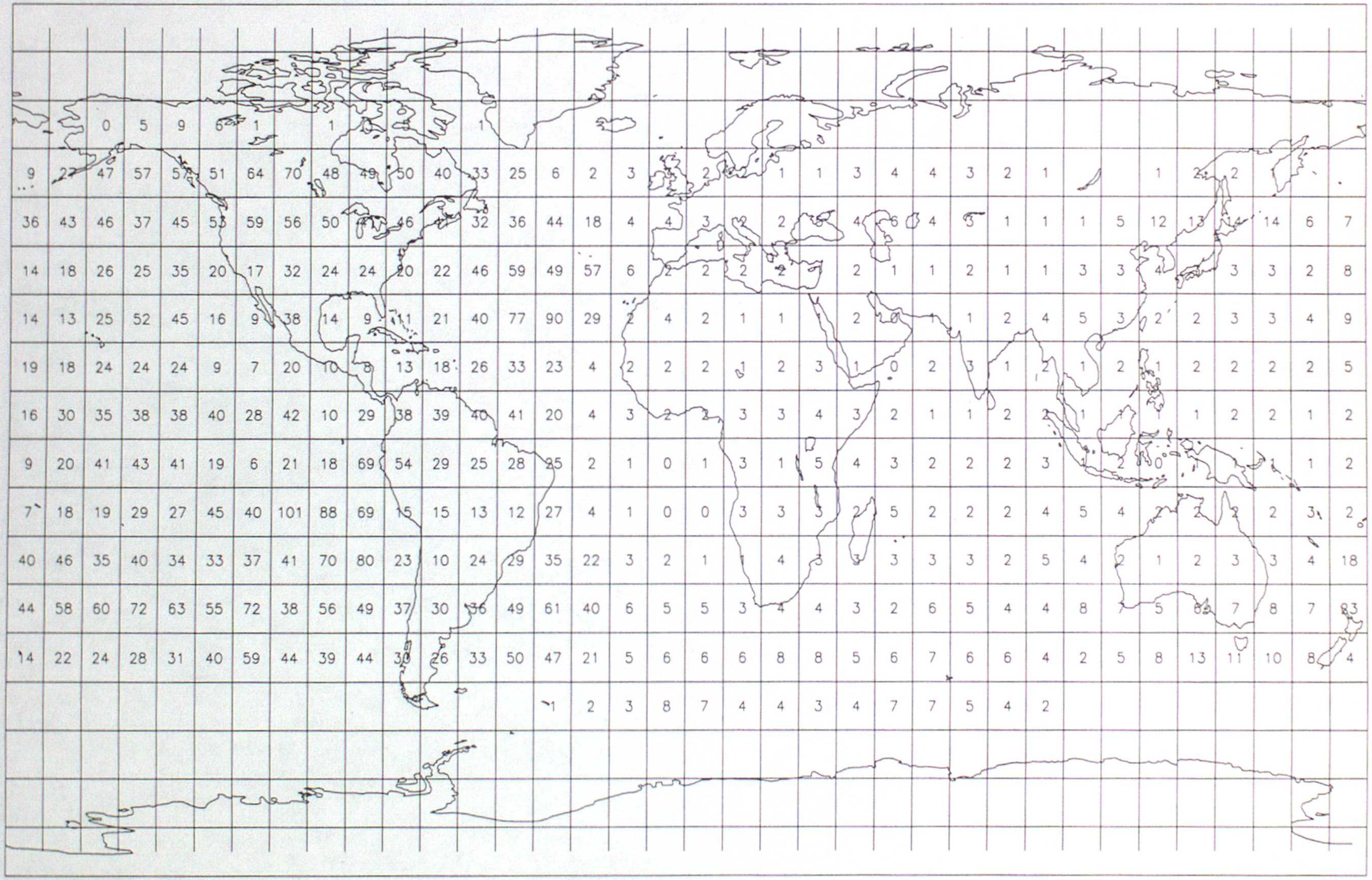

.5
-.2 .0 .5 .4 -.2 .9 .8 -.2 -.6 -1.3 -.3 -.7 1.1 -.5 -1.3 -.1 .0 .3 -.7 -.1 -.4 -.7 .1
-.3 -.1 -.2 -.3 -.8 -1.0 1.1 .4 -.4 -.2 -.6 -1.0 .3 .0 .2 -.1 -.6 -.8 .0 -.1 -.1 .0 -.2 -.1 -.7
-.4 -.7 -.7 -.5 -.9 -1.0 .0 1.3 -.3 -.5 .5 .3 .4 .6 -.2 .0 .0 1.2 6.6 -1.6 .8 -.1 -.1 -.2 -.4
.4 .4 .4 .4 .3 .4 2.0 2.8 1.3 1.0 .6 .5 .1 -.1 -.2 -.1 4.1 .2 1.9 2.1 2.9 2.1 1.3 .9 .1 .7 .6 .3
.3 .3 .7 .5 .7 1.3 1.6 .5 1.6 .2 .7 .4 .2 .1 .1 .6 2.2 5.9 3.2 .9 3.1 3.0 .0 -.4 2.4 .9 1.9 .4 -.1 .1 .0 -.1 .1
-.4 .0 -.1 .2 .6 .7 1.4 .9 1.5 1.9 2.6 1.0 .5 .0 .2 .3 .4 .9 1.6 5.1 5.3 .7 -.6 .1 .3 -.2 2.8 2.1 .8 .4 .3 -.3 -.4 -.5 -.9
-.2 -.3 -.4 -.1 -.1 .5 .8 .6 .9 1.6 1.6 1.0 .8 .4 .1 .3 .5 .4 .5 2.9 2.0 .3 .2 .3 .3 .4 .2 .1 .4 .5 .1 .1 .4 .3 -.3 -.9
.5 .6 .4 .2 .0 .0 .1 .0 .2 1.0 1.9 1.2 1.2 1.4 .1 .3 .1 .0 -.1 .4 .4 .0 -.1 .3 .6 .3 .3 .2 .3 -.3 -1.5 .6 .6 .3 .8
.7 .5 .2 -.2 .5 .4 .1 .2 .2 .2 .7 -.4 -.1 .3 .2 .1 .3 .0 .0 .3 -.3 .4 .3 .0 .3 .5 .3 .6 .5 .2 .7 .6 .6
.5 .2 .2 .1 -.1 -.1 -.3 -.1 -.1 -.4 -.1 .9 .2 .3 .0 .2 .3 .3 .1 .1 .6 .6 .4 .2 .3 .3 .1 .3 .3 .1 .2 .2 .0 .3 .1 .1
.2 -.1 .1 .0 -.6 -.4 -.3 -.3 .3 -.1 .0 .1 -.3 .1 .3 .2 -.1 .0 .1 .4 .3 .6 .4 .5 .5 .2 .0 .4 .2 -.3 -.4 -.1 -.1 .2 .0 .0
-.9 -.4 -.3 -.1 -.2 .0 -.1 .5 -.2 .0 .3 .3 .3

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
MAY 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


5
3 3 3 3 3 3 4 4 4 5 4 5 4 4 4 3 3 2 4 3 4 3 2
3 3 3 3 3 4 4 5 4 4 4 4 4 4 3 3 3 3 3 3 3 4 5 4 4 3 3
5 4 4 4 3 4 5 5 5 5 3 3 3 3 3 2 3 4 13 8 4 4 4 4
3 2 3 3 3 3 4 5 4 3 3 3 2 3 2 2 4 10 4 6 5 7 4 6 4 4 3 3 3
3 3 3 3 3 3 4 5 5 3 3 3 3 3 3 4 14 12 7 7 9 13 6 4 9 4 5 3 3 2 2 3 3
3 3 3 3 3 4 4 4 5 5 5 4 3 4 4 4 4 4 6 8 8 6 8 5 5 8 9 5 3 4 3 3 3 3 3
3 3 3 3 3 3 3 3 4 4 4 4 4 6 3 3 3 4 6 9 12 3 3 3 5 4 5 5 4 4 3 3 4 3 3 3
3 3 3 3 3 3 3 3 3 4 4 4 4 4 3 3 3 3 3 4 3 3 2 3 3 3 3 4 3 3 4 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 5 4 3 3 3 3 2 3 4 4 3 3 3 2 2 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 5 4 3 3 3 3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 4 3 3 3 3 3 4 3 3 3 4 4 3 3 3 3 3 4
3 3 3 3 3 3 3 3 3 3 4 4 3

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
MAY 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 6860



		0	5	9	6	1		1		5		1																							
9	27	47	57	57	51	64	70	48	49	50	40	33	25	6	2	3	3	2	2	1	1	3	4	4	3	2	1			1	2	2			
36	43	46	37	45	53	59	56	50	41	46	41	32	36	44	18	4	4	3	2	2	5	4	6	4	3	1	1	1	5	12	13	14	14	6	7
14	18	26	25	35	20	17	32	24	24	20	22	46	59	49	57	6	2	2	2	2	1	2	1	1	2	1	1	3	3	4		3	3	2	8
14	13	25	52	45	16	9	38	14	9	11	21	40	77	90	29	2	4	2	1	1	1	2	0	1	1	2	4	5	3	2	2	3	3	4	9
19	18	24	24	24	9	7	20	10	8	13	18	26	33	23	4	2	2	2	1	2	3	1	0	2	3	1	2	1	2	1	2	2	2	2	5
16	30	35	38	38	40	28	42	10	29	38	39	40	41	20	4	3	2	2	3	3	4	3	2	1	1	2	2	1	1	1	1	2	2	1	2
9	20	41	43	41	19	6	21	18	69	54	29	25	28	25	2	1	0	1	3	1	5	4	3	2	2	2	3	1	2	0	1	1	1	1	2
7	18	19	29	27	45	40	101	88	69	15	15	13	12	27	4	1	0	0	3	3	3	2	5	2	2	2	4	5	4	2	2	2	2	3	2
40	46	35	40	34	33	37	41	70	80	23	10	24	29	35	22	3	2	1	1	4	3	3	3	3	3	2	5	4	2	1	2	3	3	4	18
44	58	60	72	63	55	72	38	56	49	37	30	36	49	61	40	6	5	5	3	4	4	3	2	6	5	4	4	8	7	5	6	7	8	7	83
14	22	24	28	31	40	59	44	39	44	30	26	33	50	47	21	5	6	6	6	8	8	5	6	7	6	6	4	2	5	8	13	11	10	8	4
														1	2	3	8	7	4	4	3	4	7	7	5	4	2								

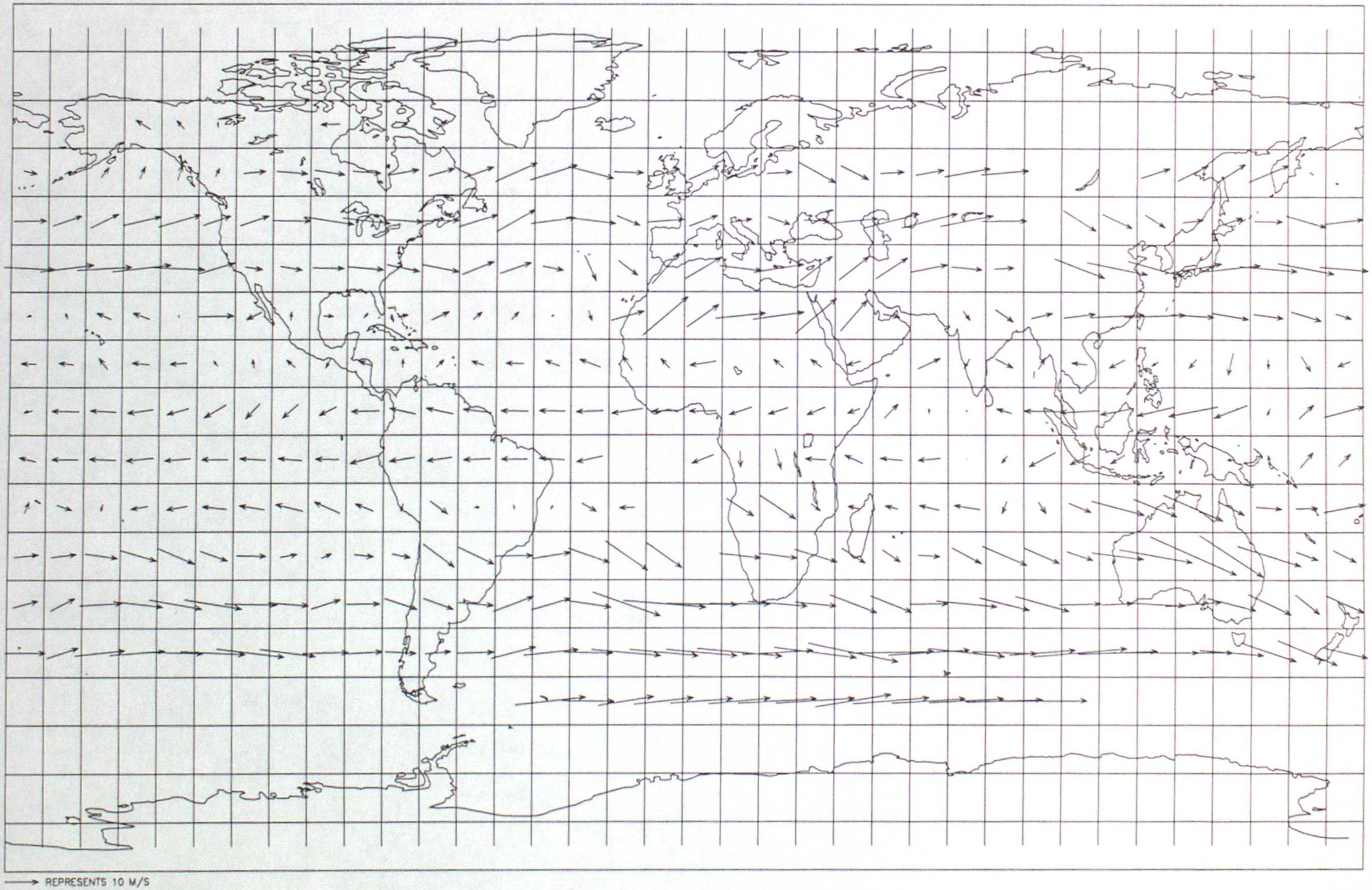
SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA

MAY 2000

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 16


→ REPRESENTS 10 M/S

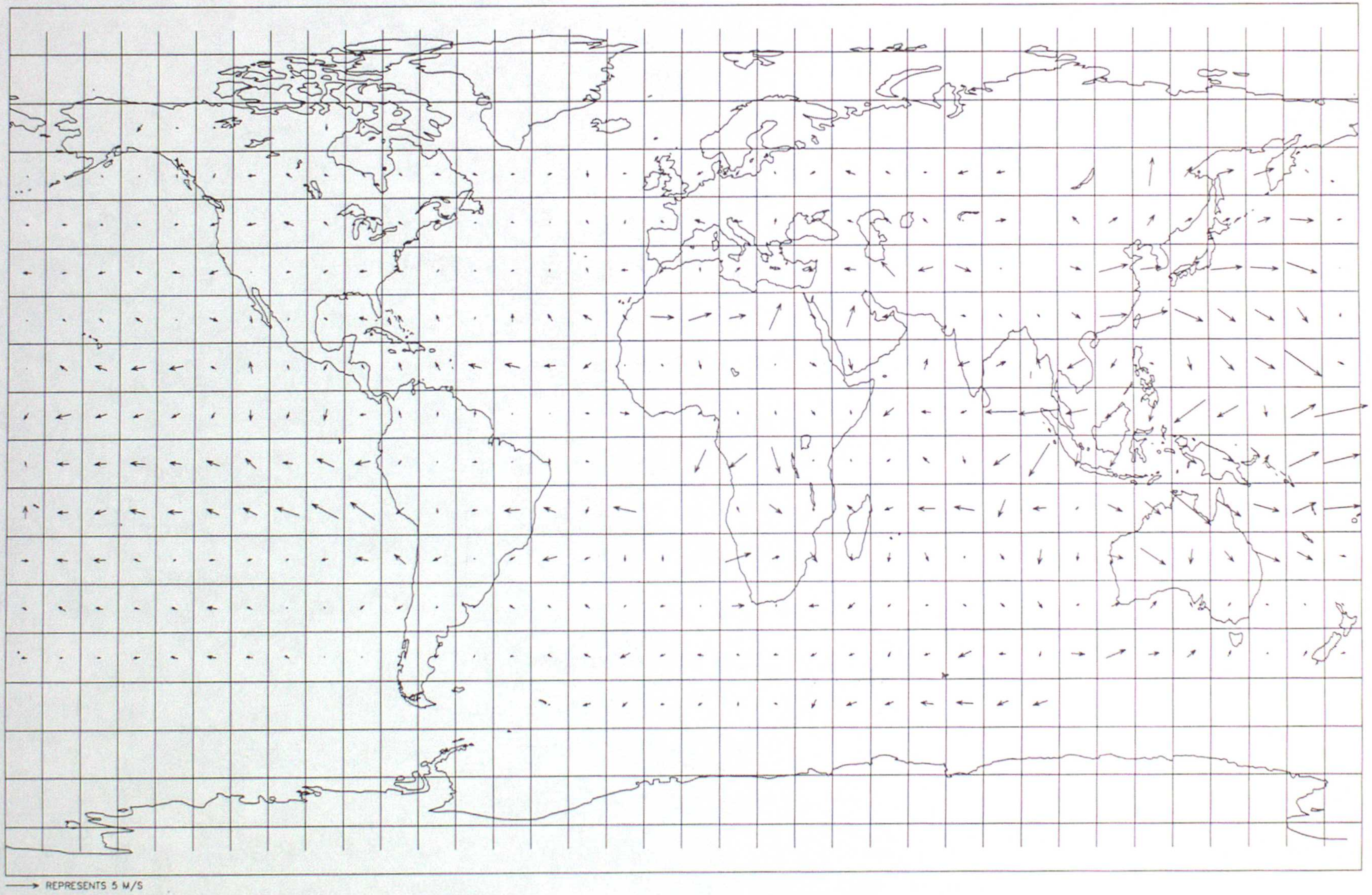
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 401–700 HPA

FIGURE 17

MAY 2000

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

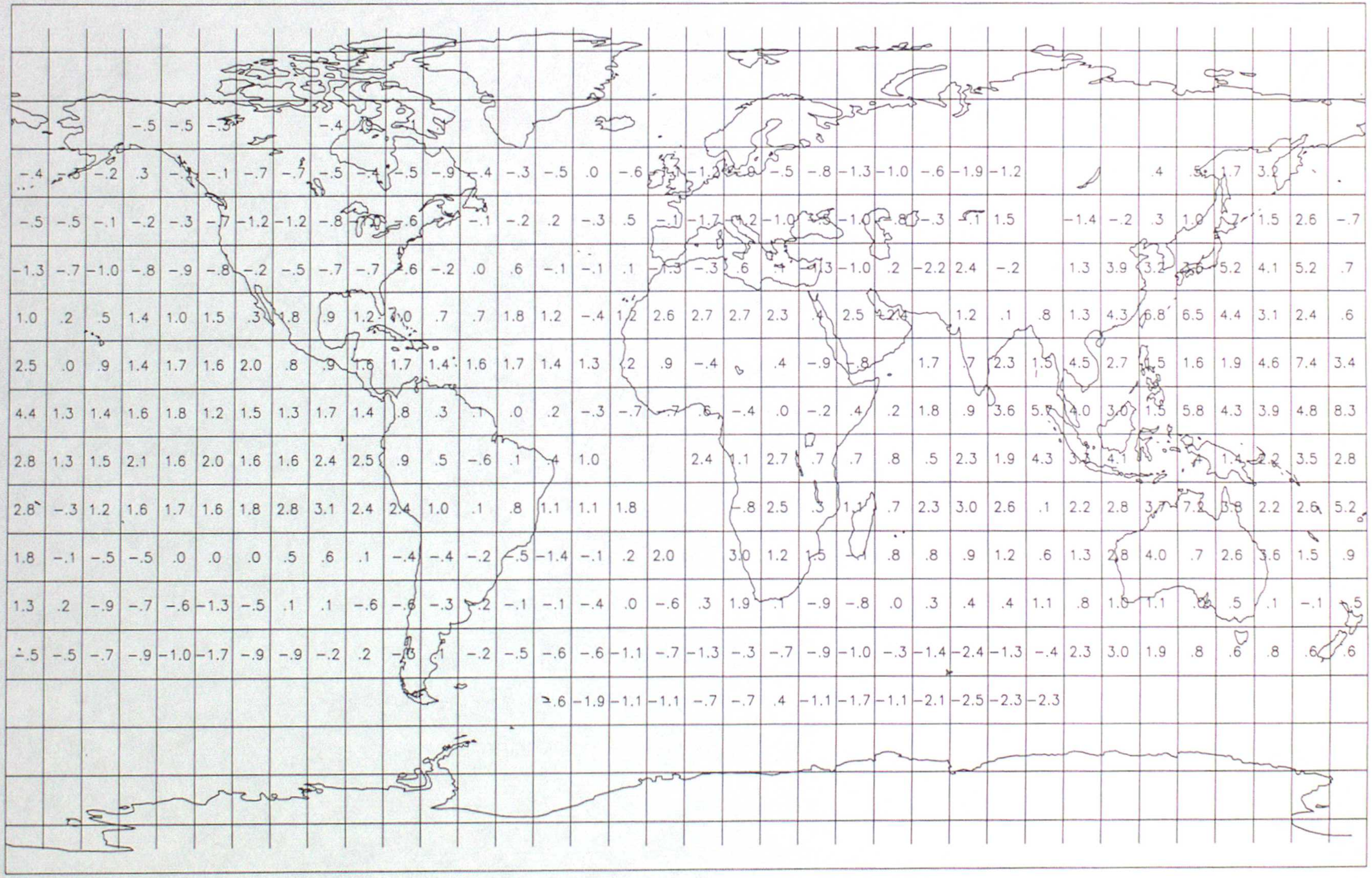

REPRESENTS 5 M/S

SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18

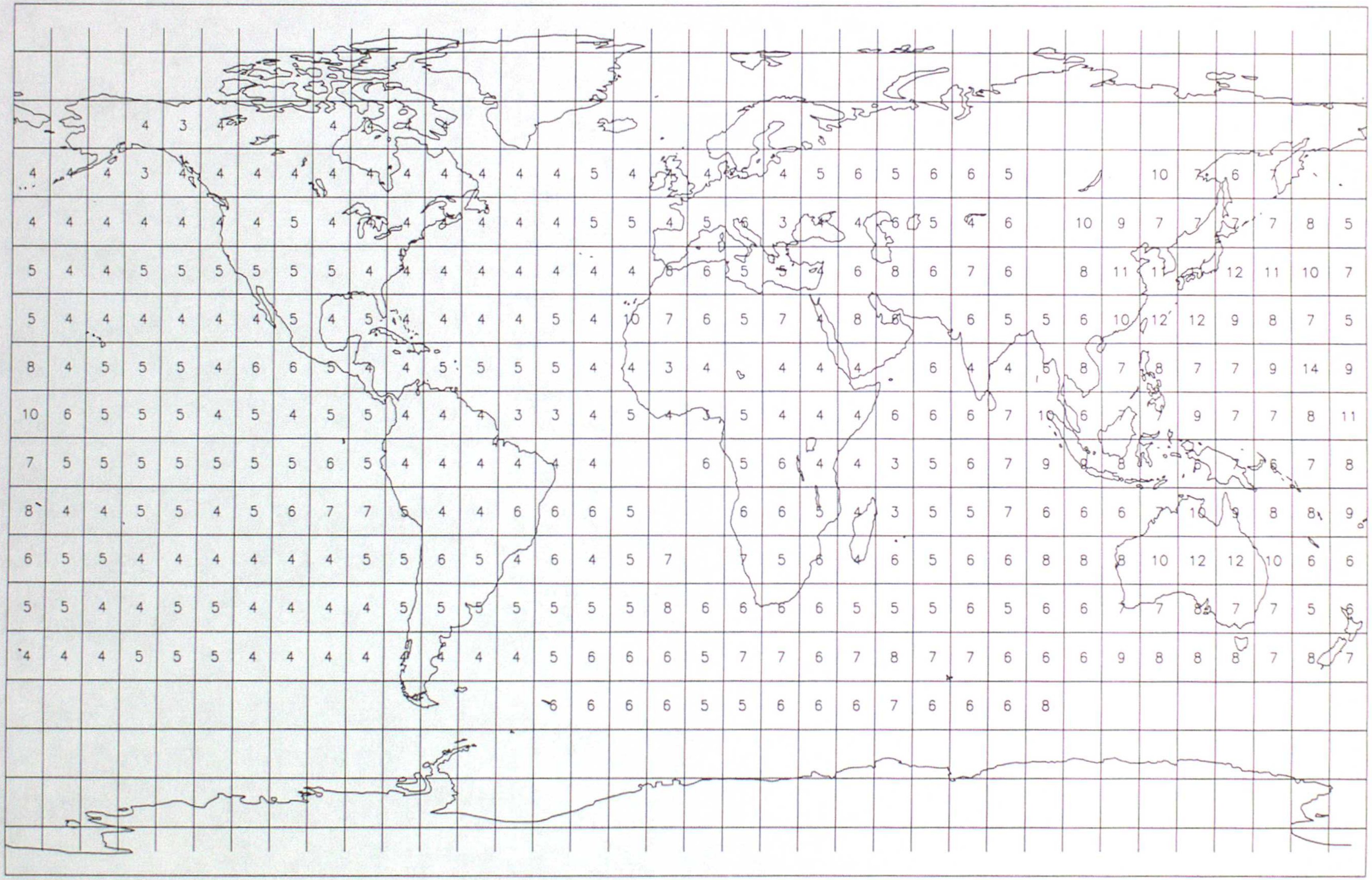
MAY 2000

USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

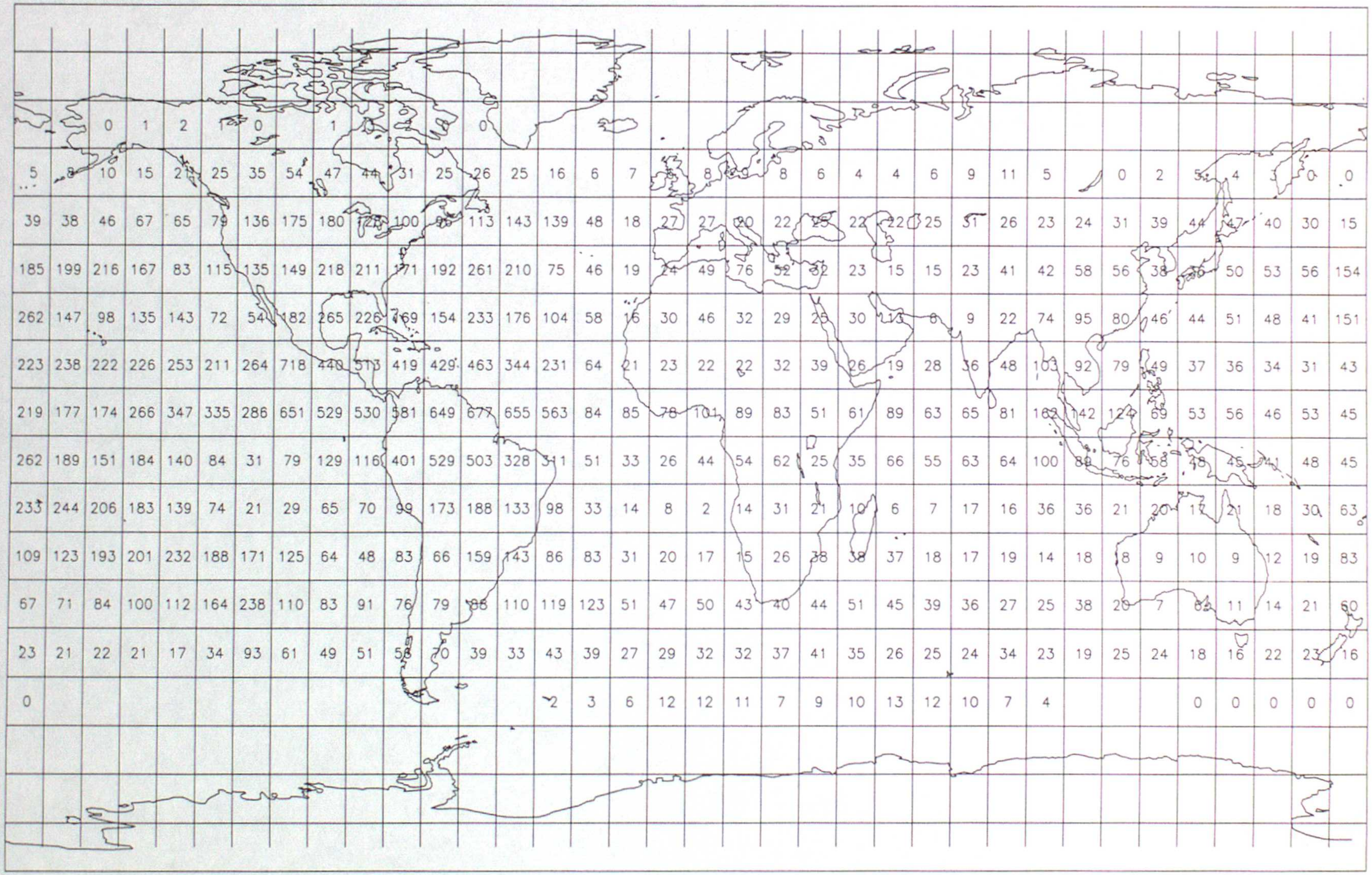

-.5 -.5 -.3 -.4
-.4 -.3 -.2 .3 -.1 -.1 -.7 -.7 -.5 -.4 -.5 -.9 .4 -.3 -.5 .0 -.6 -.1 -1.2 -.8 -.5 -.8 -1.3 -1.0 -.6 -1.9 -1.2 .4 .5 1.7 3.2
-.5 -.5 -.1 -.2 -.3 -.7 -1.2 -1.2 -.8 -.6 -.6 -.7 -.1 -.2 .2 -.3 .5 -.1 -1.7 -.2 -1.0 -.5 -1.0 -.8 -.3 -.1 1.5 -1.4 -.2 .3 1.0 .7 1.5 2.6 -.7
-1.3 -.7 -1.0 -.8 -.9 -.8 -.2 -.5 -.7 -.7 .6 -.2 .0 .6 -.1 -.1 .1 -1.3 -.3 .6 .4 -1.3 -1.0 .2 -2.2 2.4 -.2 1.3 3.9 3.2 3.6 5.2 4.1 5.2 .7
1.0 .2 .5 1.4 1.0 1.5 .3 1.8 .9 1.2 1.0 .7 .7 1.8 1.2 -.4 1.2 2.6 2.7 2.7 2.3 .4 2.5 2.4 1.2 .1 .8 1.3 4.3 6.8 6.5 4.4 3.1 2.4 .6
2.5 .0 .9 1.4 1.7 1.6 2.0 .8 .9 1.6 1.7 1.4 1.6 1.7 1.4 1.3 .2 .9 -.4 .4 -.9 .8 1.7 .7 2.3 1.5 4.5 2.7 .5 1.6 1.9 4.6 7.4 3.4
4.4 1.3 1.4 1.6 1.8 1.2 1.5 1.3 1.7 1.4 .8 .3 .1 .0 .2 -.3 -.7 -.7 .6 -.4 .0 -.2 .4 .2 1.8 .9 3.6 5.7 4.0 3.0 1.5 5.8 4.3 3.9 4.8 8.3
2.8 1.3 1.5 2.1 1.6 2.0 1.6 1.6 2.4 2.5 .9 .5 -.6 .1 .4 1.0 2.4 1.1 2.7 .7 .7 .8 .5 2.3 1.9 4.3 3.3 4.1 .4 1.4 2.2 3.5 2.8
2.8 -.3 1.2 1.6 1.7 1.6 1.8 2.8 3.1 2.4 2.4 1.0 .1 .8 1.1 1.1 1.8 .8 2.5 .3 1.1 .7 2.3 3.0 2.6 .1 2.2 2.8 3.7 7.2 3.8 2.2 2.6 5.2
1.8 -.1 -.5 -.5 .0 .0 .0 .5 .6 .1 -.4 -.4 -.2 -.5 -1.4 -.1 .2 2.0 3.0 1.2 1.5 -.1 .8 .8 .9 1.2 .6 1.3 2.8 4.0 .7 2.6 3.6 1.5 .9
1.3 .2 -.9 -.7 -.6 -1.3 -.5 .1 .1 -.6 -.6 -.3 -.2 -.1 -.1 -.4 .0 -.6 .3 1.9 .1 -.9 -.8 .0 .3 .4 .4 1.1 .8 1.0 1.1 .5 .5 .1 -.1 .5
-.5 -.5 -.7 -.9 -1.0 -1.7 -.9 -.9 -.2 .2 -.3 .1 -.2 -.5 -.6 -.6 -1.1 -.7 -1.3 -.3 -.7 -.9 -1.0 -.3 -1.4 -2.4 -1.3 -.4 2.3 3.0 1.9 .8 .6 .8 .6 .6
.6 -1.9 -1.1 -1.1 -.7 -.7 .4 -1.1 -1.7 -1.1 -2.1 -2.5 -2.3 -2.3

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
MAY 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
MAY 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 37169



		0	1	2	1	0		1				0																							
5	8	10	15	21	25	35	54	47	44	31	25	26	25	16	6	7	8	8	9	8	6	4	4	6	9	11	5		0	2	5	4	3	0	0
39	38	46	67	65	79	136	175	180	128	100	95	113	143	139	48	18	27	27	20	22	25	22	22	25	31	26	23	24	31	39	44	47	40	30	15
185	199	216	167	83	115	135	149	218	211	171	192	261	210	75	46	19	24	49	76	52	32	23	15	15	23	41	42	58	56	38	36	50	53	56	154
262	147	98	135	143	72	54	182	265	226	169	154	233	176	104	58	16	30	46	32	29	25	30	13	8	9	22	74	95	80	46	44	51	48	41	151
223	238	222	226	253	211	264	718	440	513	419	429	463	344	231	64	21	23	22	22	32	39	26	19	28	36	48	103	92	79	49	37	36	34	31	43
219	177	174	266	347	335	286	651	529	530	581	649	677	655	563	84	85	78	101	89	83	51	61	89	63	65	81	162	142	124	69	53	56	46	53	45
262	189	151	184	140	84	31	79	129	116	401	529	503	328	311	51	33	26	44	54	62	25	35	66	55	63	64	100	88	76	58	48	45	41	48	45
233	244	206	183	139	74	21	29	65	70	99	173	188	133	98	33	14	8	2	14	31	21	10	6	7	17	16	36	36	21	20	17	21	18	30	63
109	123	193	201	232	188	171	125	64	48	83	66	159	143	86	83	31	20	17	15	26	38	38	37	18	17	19	14	18	18	9	10	9	12	19	83
67	71	84	100	112	164	238	110	83	91	76	79	88	110	119	123	51	47	50	43	40	44	51	45	39	36	27	25	38	20	7	62	11	14	21	60
23	21	22	21	17	34	93	61	49	51	58	70	39	33	43	39	27	29	32	32	37	41	35	26	25	24	34	23	19	25	24	18	16	22	23	16
0														2	3	6	12	12	11	7	9	10	13	12	10	7	4				0	0	0	0	0

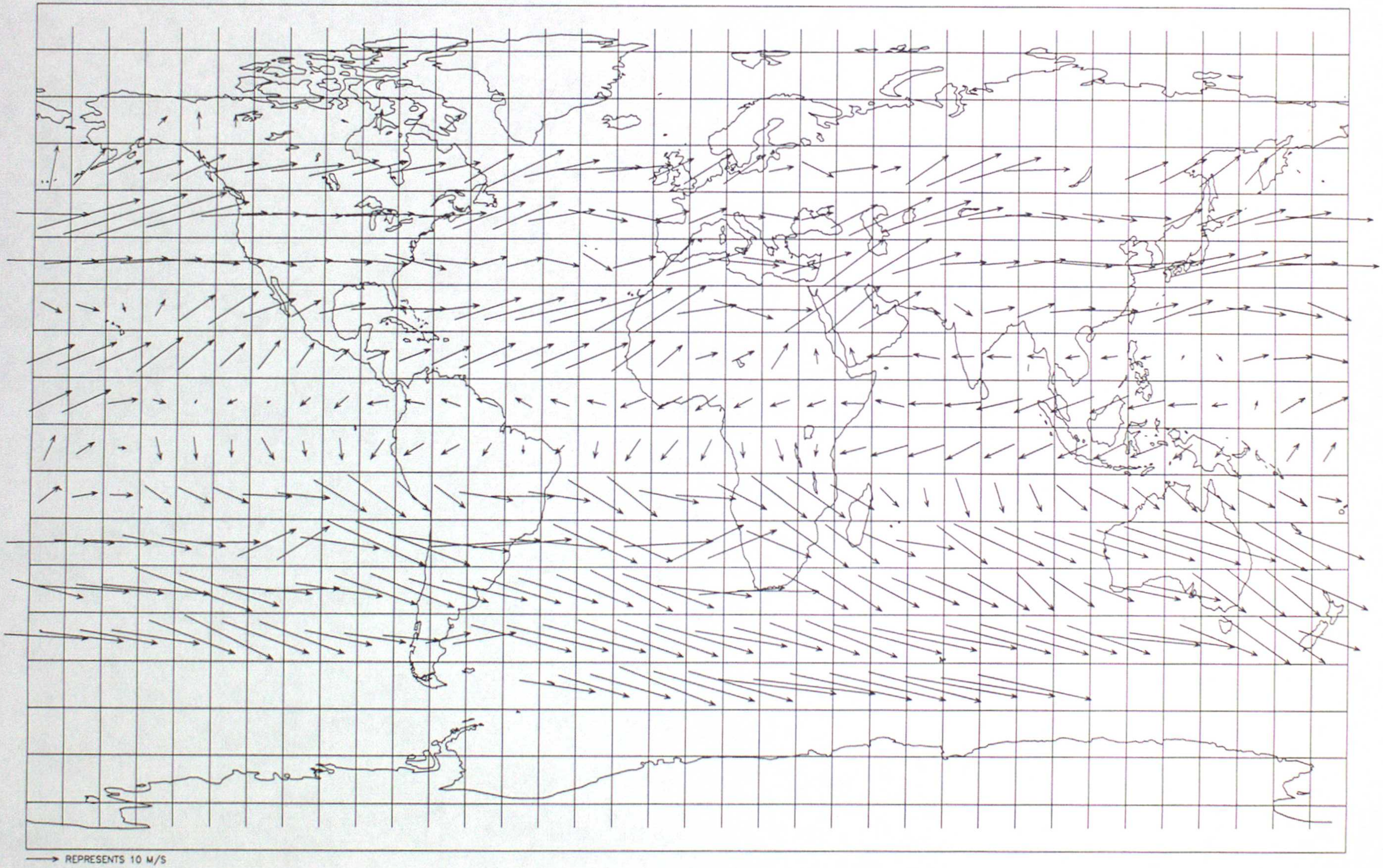
SATOB METEOSAT W/V VECTOR MEAN WINDS BETWEEN 101–400 HPA

MAY 2000

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21


REPRESENTS 10 M/S

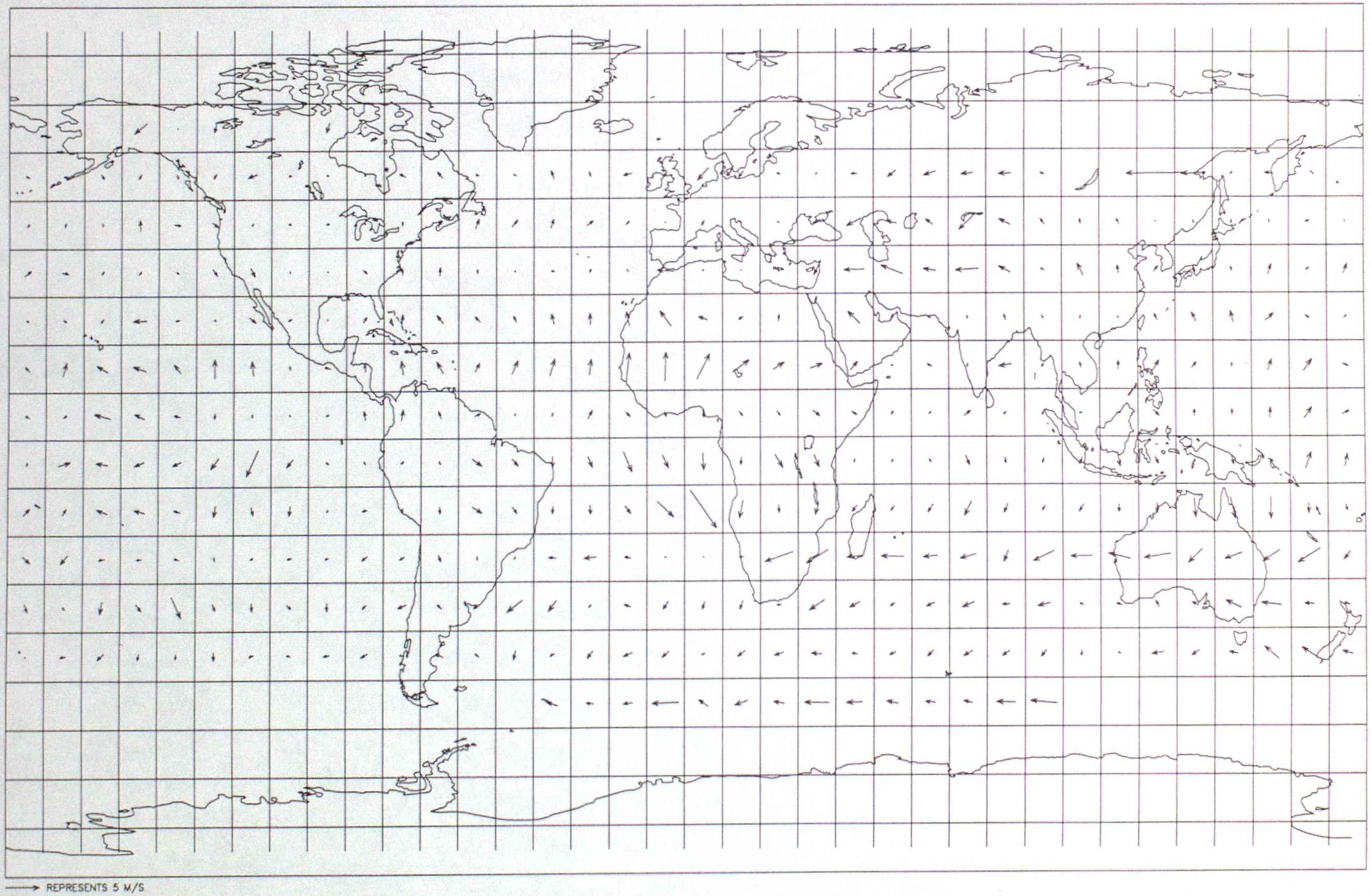
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 101-400 HPA

FIGURE 22

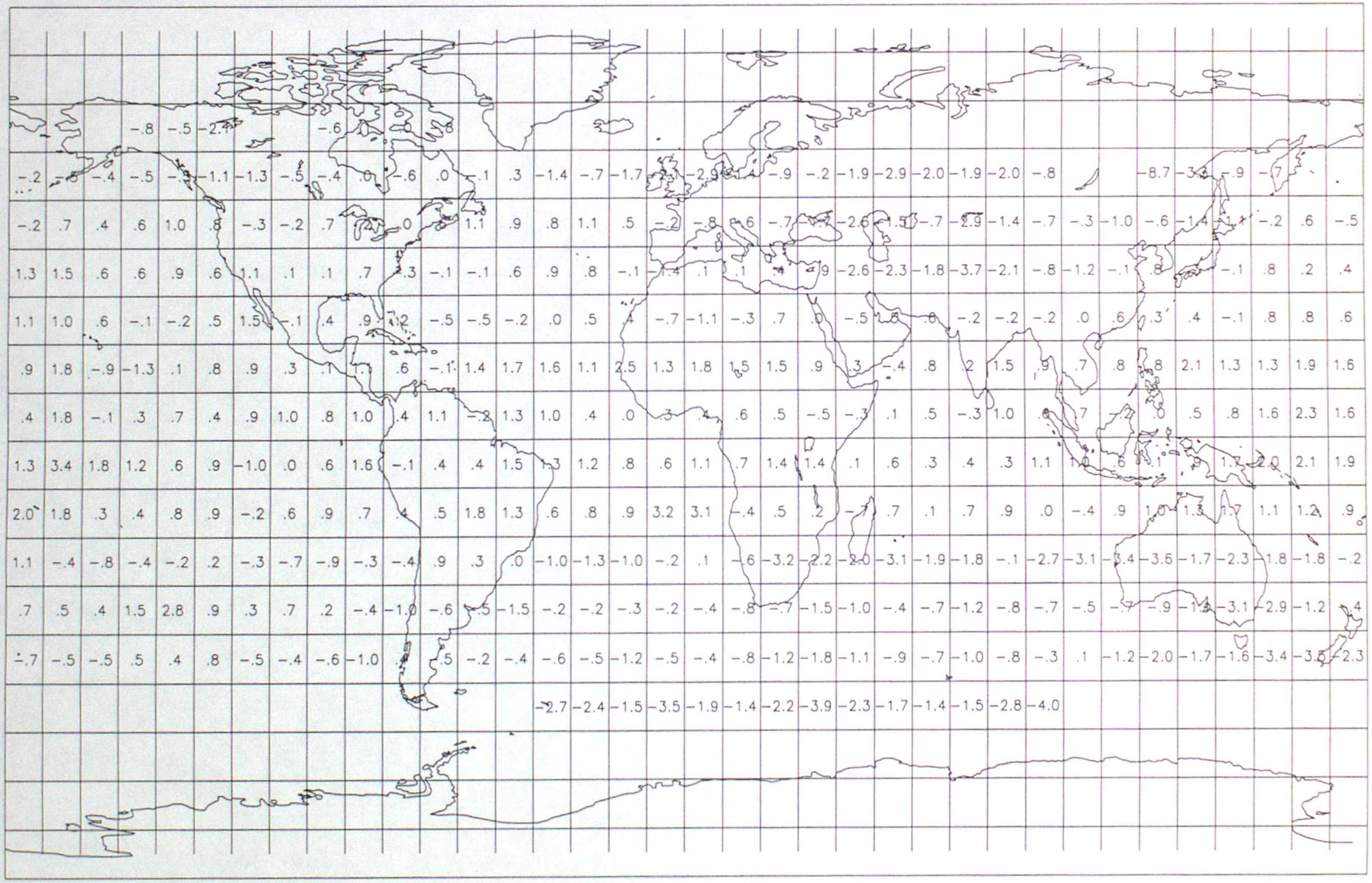
MAY 2000

ALL OBSERVATIONS

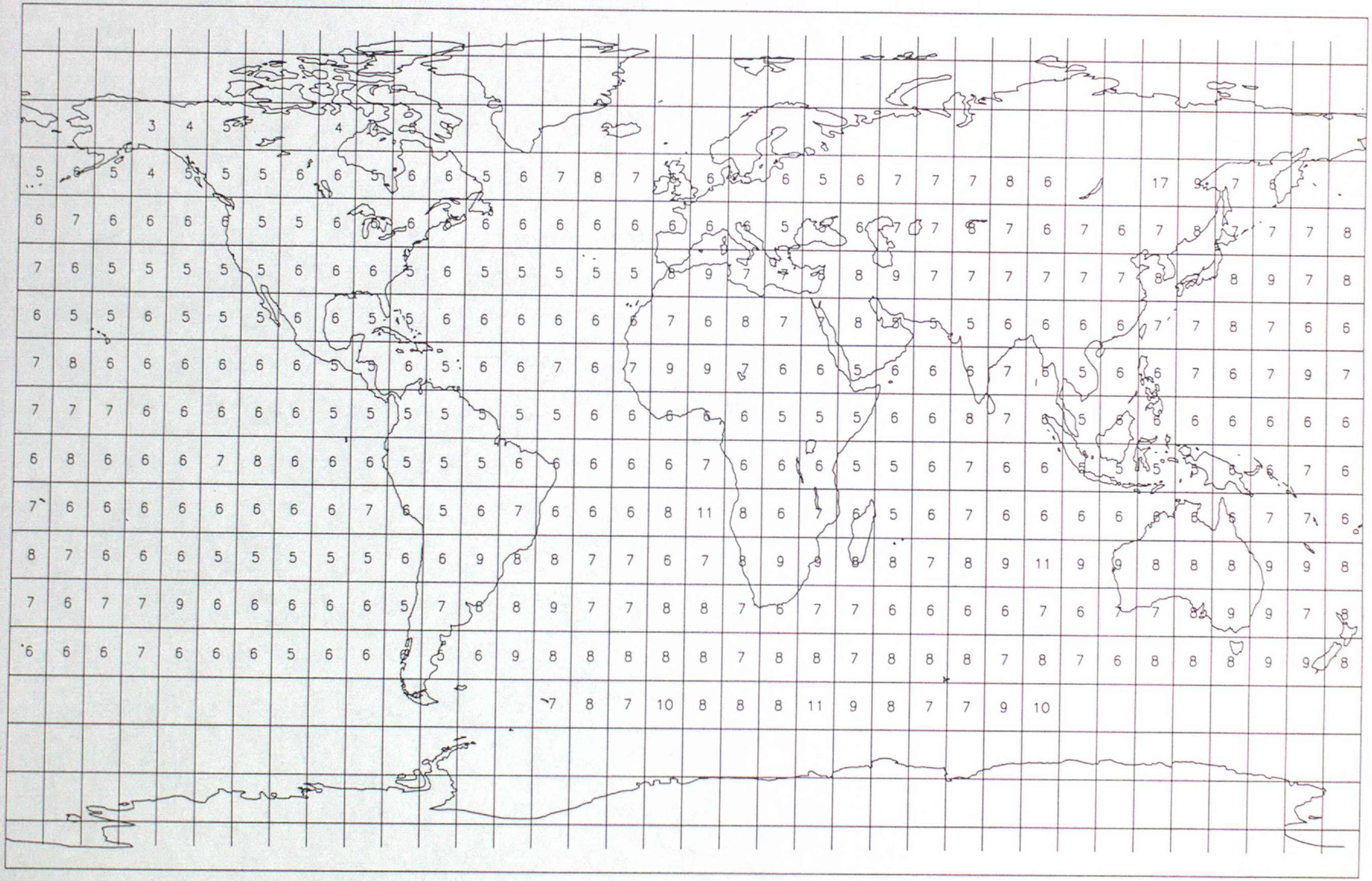
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 5 M/S

SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
MAY 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-.8 -.5 -2.1 -.6
-.2 -.5 -.4 -.5 -.3 -1.1 -1.3 -.5 -.4 .0 -.6 .0 -.1 .3 -1.4 -.7 -1.7 -2.3 -2.9 -1.4 -.9 -.2 -1.9 -2.9 -2.0 -1.9 -2.0 -.8 -8.7 -3.3 -.9 -.7
-.2 .7 .4 .6 1.0 .8 -.3 -.2 .7 .0 1.1 .9 .8 1.1 .5 -.2 -.8 -.6 -.7 -.7 -2.6 -1.5 -.7 -2.9 -1.4 -.7 -.3 -1.0 -.6 -1.4 -1.1 -.2 .6 -.5
1.3 1.5 .6 .6 .9 .6 1.1 .1 .1 .7 .3 -.1 -.1 .6 .9 .8 -.1 -1.4 .1 .1 .4 -.9 -2.6 -2.3 -1.8 -3.7 -2.1 -.8 -1.2 -.1 .8 -.1 .8 .2 .4
1.1 1.0 .6 -.1 -.2 .5 1.5 -.1 .4 .9 .2 -.5 -.5 -.2 .0 .5 .4 -.7 -1.1 -.3 .7 .0 -.5 .6 .6 -.2 -.2 -.2 .0 .6 .3 .4 -.1 .8 .8 .6
.9 1.8 -.9 -1.3 .1 .8 .9 .3 .1 1.1 .6 -.1 1.4 1.7 1.6 1.1 2.5 1.3 1.8 1.5 1.5 .9 .3 -.4 .8 .2 1.5 .9 .7 .8 .8 2.1 1.3 1.3 1.9 1.6
.4 1.8 -.1 .3 .7 .4 .9 1.0 .8 1.0 .4 1.1 -.2 1.3 1.0 .4 .0 .3 .4 .6 .5 -.5 -.3 .1 .5 -.3 1.0 .6 .7 -.2 .0 .5 .8 1.6 2.3 1.6
1.3 3.4 1.8 1.2 .6 .9 -1.0 .0 .6 1.6 -.1 .4 .4 1.5 1.3 1.2 .8 .6 1.1 .7 1.4 1.4 .1 .6 .3 .4 .3 1.1 1.0 .6 .1 .9 1.7 2.0 2.1 1.9
2.0 1.8 .3 .4 .8 .9 -.2 .6 .9 .7 .4 .5 1.8 1.3 .6 .8 .9 3.2 3.1 .4 .5 .2 -.7 .7 .1 .7 .9 .0 -.4 .9 1.0 1.3 1.7 1.1 1.2 .9
1.1 -.4 -.8 -.4 -.2 .2 -.3 -.7 -.9 -.3 -.4 .9 .3 .0 -1.0 -1.3 -1.0 -.2 .1 -.6 -3.2 -2.2 -2.0 -3.1 -1.9 -1.8 -.1 -2.7 -3.1 -3.4 -3.6 -1.7 -2.3 -1.8 -1.8 -.2
.7 .5 .4 1.5 2.8 .9 .3 .7 .2 -.4 -1.0 -.6 -.5 -1.5 -.2 -.2 -.3 -.2 -.4 -.8 -.7 -1.5 -1.0 -.4 -.7 -1.2 -.8 -.7 -.5 -.7 -.9 -1.3 -3.1 -2.9 -1.2 .4
-.7 -.5 -.5 .5 .4 .8 -.5 -.4 -.6 -1.0 .2 .5 -.2 -.4 -.6 -.5 -1.2 -.5 -.4 -.8 -1.2 -1.8 -1.1 -.9 -.7 -1.0 -.8 -.3 .1 -1.2 -2.0 -1.7 -1.6 -3.4 -3.5 -2.3
-2.7 -2.4 -1.5 -3.5 -1.9 -1.4 -2.2 -3.9 -2.3 -1.7 -1.4 -1.5 -2.8 -4.0

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
MAY 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: MAY 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)

- HIRS8 (Surface)
- HIRS15 (700)
- HIRS11 (500-700)
- HIRS4 (400)
- AMSUA5 (700)
- AMSUA7 (300)
- AMSUA9 (100)

:Mean and standard deviation observation-minus-background brightness temperature differences

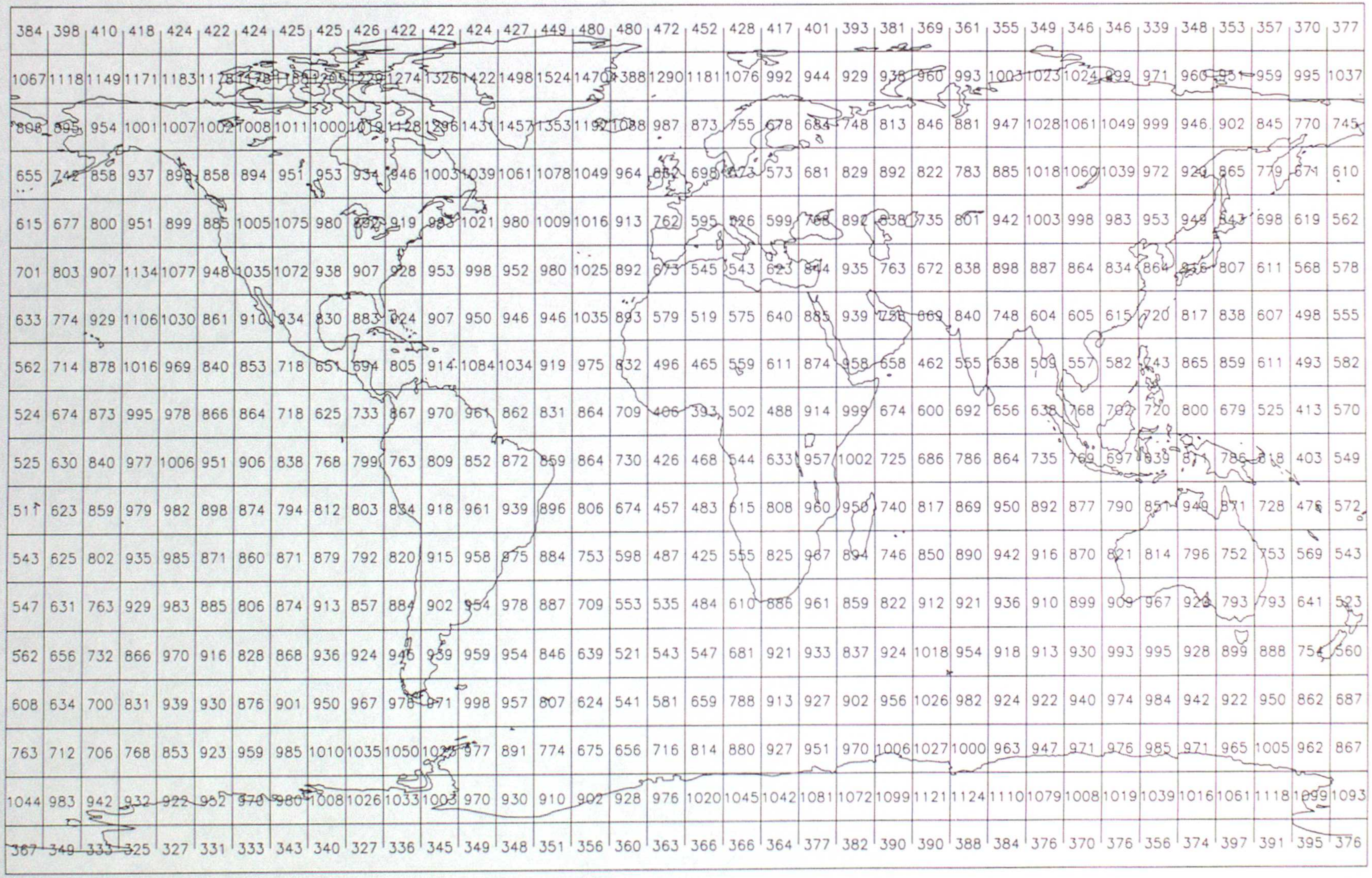
ATOVS : MEAN DAILY NUMBER OF OBSERVATIONS

FIGURE 25

MAY 2000

NOAA-15, USING ALL OBSERVATIONS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 521419



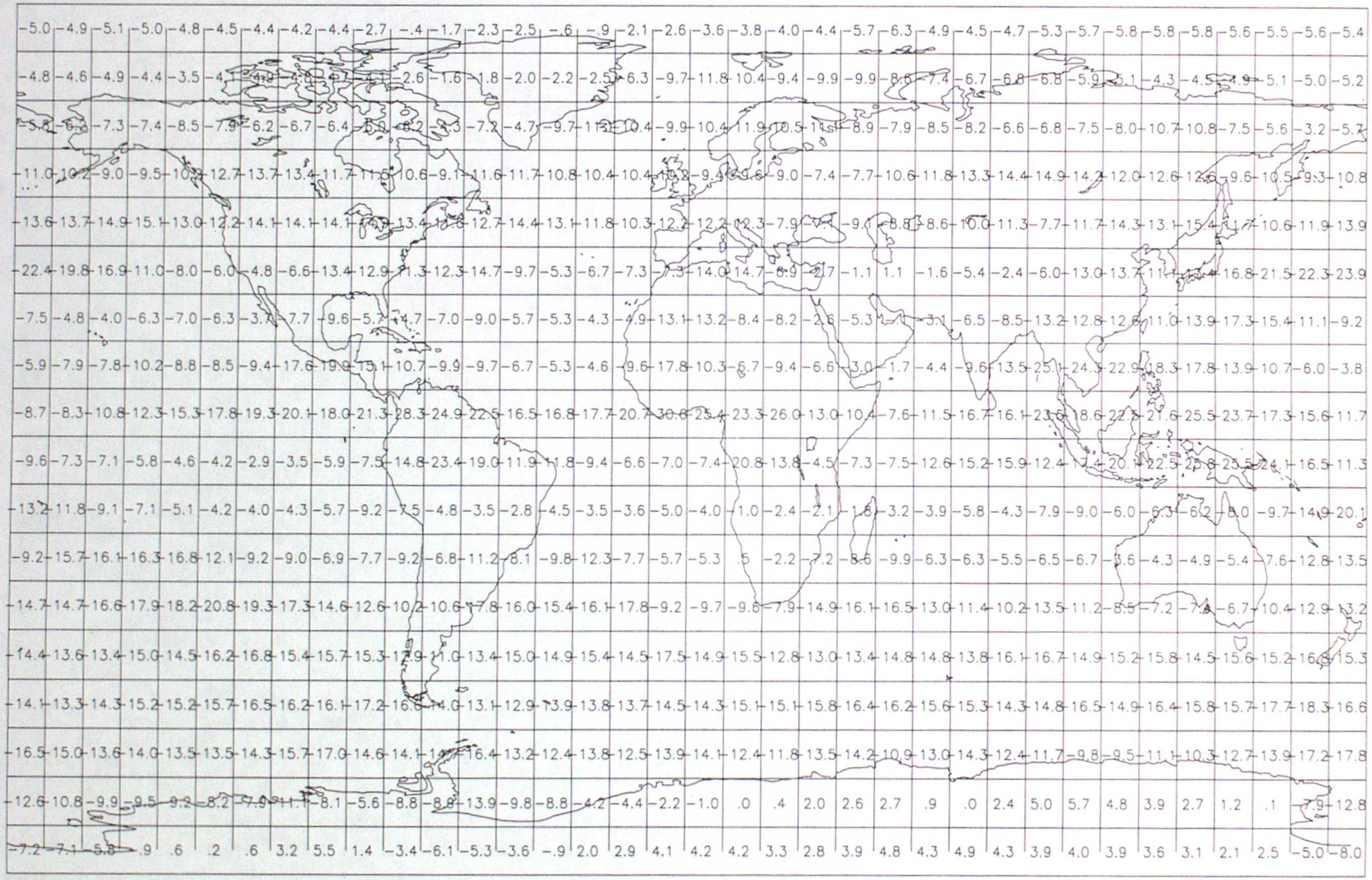
384	398	410	418	424	422	424	425	425	426	422	422	424	427	449	480	480	472	452	428	417	401	393	381	369	361	355	349	346	346	339	348	353	357	370	377
1067	1118	1149	1171	1183	1178	1178	1188	1205	1229	1274	1326	1422	1498	1524	1470	1388	1290	1181	1076	992	944	929	938	960	993	1003	1023	1024	999	971	960	951	959	995	1037
808	895	954	1001	1007	1002	1008	1011	1000	1019	1128	1296	1431	1457	1353	1192	1088	987	873	755	678	684	748	813	846	881	947	1028	1061	1049	999	946	902	845	770	745
655	742	858	937	898	858	894	951	953	934	946	1003	1039	1061	1078	1049	964	882	698	673	573	681	829	892	822	783	885	1018	1060	1039	972	929	865	779	671	610
615	677	800	951	899	885	1005	1075	980	892	919	983	1021	980	1009	1016	913	762	595	526	599	768	892	838	735	801	942	1003	998	983	953	949	843	698	619	562
701	803	907	1134	1077	948	1035	1072	938	907	928	953	998	952	980	1025	892	673	545	543	623	844	935	763	672	838	898	887	864	834	864	836	807	611	568	578
633	774	929	1106	1030	861	910	934	830	883	924	907	950	946	946	1035	893	579	519	575	640	885	939	756	869	840	748	604	605	615	720	817	838	607	498	555
562	714	878	1016	969	840	853	718	651	694	805	914	1084	1034	919	975	832	496	465	559	611	874	958	658	462	555	638	509	557	582	743	865	859	611	493	582
524	674	873	995	978	866	864	718	625	733	867	970	961	862	831	864	709	406	393	502	488	914	999	674	600	692	656	638	768	702	720	800	679	525	413	570
525	630	840	977	1006	951	906	838	768	799	763	809	852	872	859	864	730	426	468	544	633	957	1002	725	686	786	864	735	769	697	839	871	786	818	403	549
511	623	859	979	982	898	874	794	812	803	834	918	961	939	896	806	674	457	483	615	808	960	950	740	817	869	950	892	877	790	851	949	871	728	476	572
543	625	802	935	985	871	860	871	879	792	820	915	958	875	884	753	598	487	425	555	825	967	894	746	850	890	942	916	870	821	814	796	752	753	569	543
547	631	763	929	983	885	806	874	913	857	884	902	954	978	887	709	553	535	484	610	886	961	859	822	912	921	936	910	899	909	967	928	793	793	641	523
562	656	732	866	970	916	828	868	936	924	946	939	959	954	846	639	521	543	547	681	921	933	837	924	1018	954	918	913	930	993	995	928	899	888	754	560
608	634	700	831	939	930	876	901	950	967	978	971	998	957	807	624	541	581	659	788	913	927	902	956	1026	982	924	922	940	974	984	942	922	950	862	687
763	712	706	768	853	923	959	985	1010	1035	1050	1025	977	891	774	675	656	716	814	880	927	951	970	1006	1027	1000	963	947	971	976	985	971	965	1005	962	867
1044	983	942	932	922	952	970	980	1008	1026	1033	1003	970	930	910	902	928	976	1020	1045	1042	1081	1072	1099	1121	1124	1110	1079	1008	1019	1039	1016	1061	1118	1099	1093
367	349	333	325	327	331	333	343	340	327	336	345	349	348	351	356	360	363	366	366	364	377	382	390	390	388	384	376	370	376	356	374	397	391	395	376

ATOVS : MEAN O−B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)

FIGURE 26

MAY 2000 : HIRS8 channel (Surface)

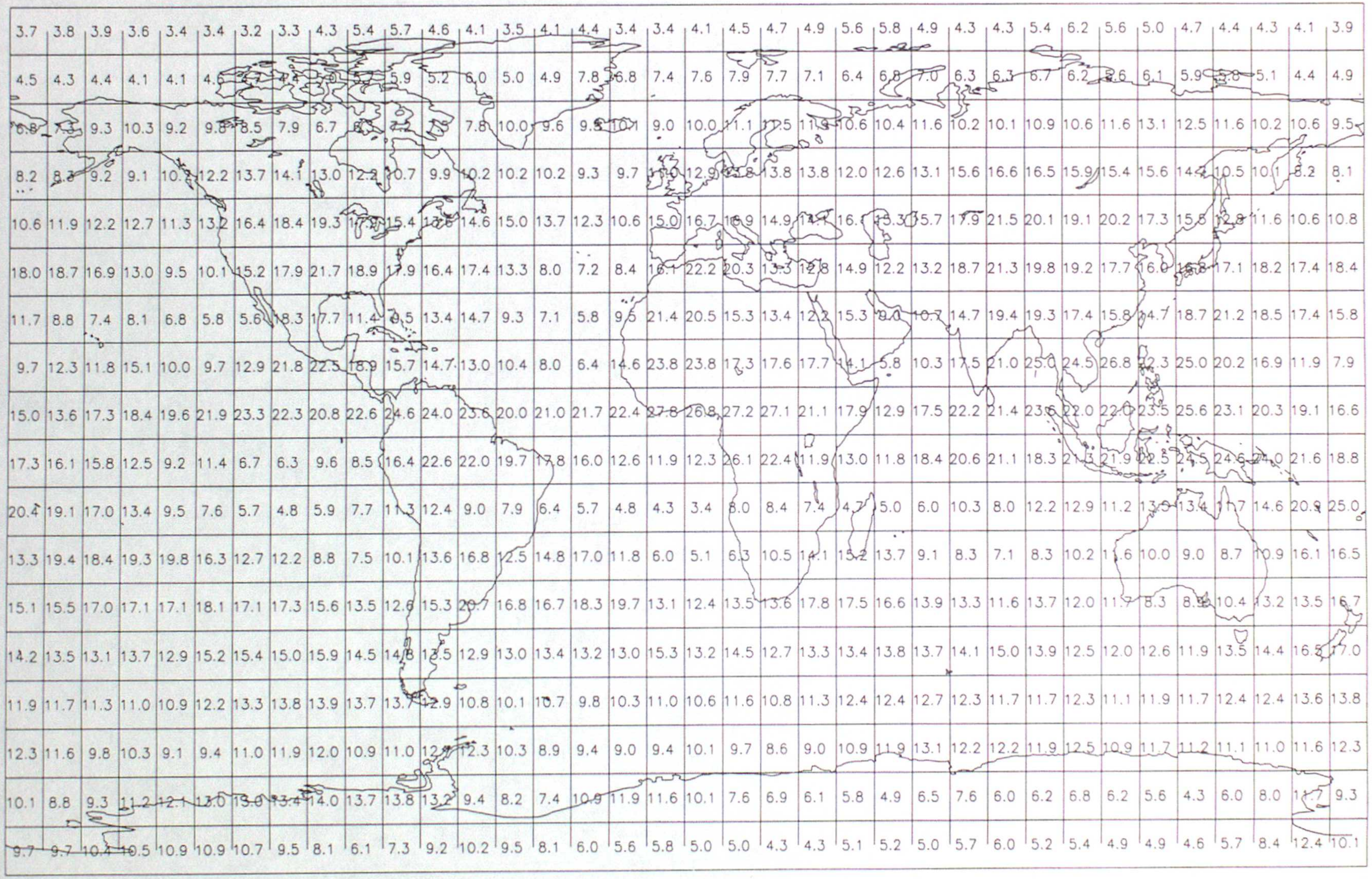
NOAA−15, USING ALL OBSERVATIONS



-5.0	-4.9	-5.1	-5.0	-4.8	-4.5	-4.4	-4.2	-4.4	-2.7	-.4	-1.7	-2.3	-2.5	-.6	-.9	-2.1	-2.6	-3.6	-3.8	-4.0	-4.4	-5.7	-6.3	-4.9	-4.5	-4.7	-5.3	-5.7	-5.8	-5.8	-5.8	-5.6	-5.5	-5.6	-5.4
-4.8	-4.6	-4.9	-4.4	-3.5	-4.1	-4.9	-4.6	-4.7	-4.1	-2.6	-1.6	-1.8	-2.0	-2.2	-2.5	-6.3	-9.7	-11.8	-10.4	-9.4	-9.9	-9.9	-8.6	-7.4	-6.7	-6.8	-6.8	-5.9	-5.1	-4.3	-4.5	-4.9	-5.1	-5.0	-5.2
-5.8	-6.3	-7.3	-7.4	-8.5	-7.9	-6.2	-6.7	-6.4	-5.0	-6.2	-4.3	-7.2	-4.7	-9.7	-11.3	-10.4	-9.9	-10.4	-11.9	-10.5	-11.5	-8.9	-7.9	-8.5	-8.2	-6.6	-6.8	-7.5	-8.0	-10.7	-10.8	-7.5	-5.6	-3.2	-5.7
-11.0	-10.2	-9.0	-9.5	-10.3	-12.7	-13.7	-13.4	-11.7	-11.5	-10.6	-9.1	-11.6	-11.7	-10.8	-10.4	-10.4	-10.2	-9.4	-9.6	-9.0	-7.4	-7.7	-10.6	-11.8	-13.3	-14.4	-14.9	-14.2	-12.0	-12.6	-12.6	-9.6	-10.5	-9.3	-10.8
-13.6	-13.7	-14.9	-15.1	-13.0	-12.2	-14.1	-14.1	-14.1	-14.9	-13.4	-13.6	-12.7	-14.4	-13.1	-11.8	-10.3	-12.2	-12.2	-12.3	-7.9	[illegible]	-9.1	-8.8	-8.6	-10.0	-11.3	-7.7	-11.7	-14.3	-13.1	-15.4	-11.7	-10.6	-11.9	-13.9
-22.4	-19.8	-16.9	-11.0	-8.0	-6.0	-4.8	-6.6	-13.4	-12.9	-11.3	-12.3	-14.7	-9.7	-5.3	-6.7	-7.3	-7.3	-14.0	-14.7	-6.9	-2.7	-1.1	1.1	-1.6	-5.4	-2.4	-6.0	-13.0	-13.7	-11.1	-13.4	-16.8	-21.5	-22.3	-23.9
-7.5	-4.8	-4.0	-6.3	-7.0	-6.3	-3.7	-7.7	-9.6	-5.7	-4.7	-7.0	-9.0	-5.7	-5.3	-4.3	-4.9	-13.1	-13.2	-8.4	-8.2	-2.6	-5.3	[illegible]	-3.1	-6.5	-8.5	-13.2	-12.8	-12.6	-11.0	-13.9	-17.3	-15.4	-11.1	-9.2
-5.9	-7.9	-7.8	-10.2	-8.8	-8.5	-9.4	-17.6	-19.9	-15.1	-10.7	-9.9	-9.7	-6.7	-5.3	-4.6	-9.6	-17.8	-10.3	-6.7	-9.4	-6.6	-3.0	-1.7	-4.4	-9.6	-13.5	-25.1	-24.3	-22.9	-18.3	-17.8	-13.9	-10.7	-6.0	-3.8
-8.7	-8.3	-10.8	-12.3	-15.3	-17.8	-19.3	-20.1	-18.0	-21.3	-28.3	-24.9	-22.5	-16.5	-16.8	-17.7	-20.7	-30.6	-25.4	-23.3	-26.0	-13.0	-10.4	-7.6	-11.5	-16.7	-16.1	-23.6	-18.6	-22.5	-21.6	-25.5	-23.7	-17.3	-15.6	-11.7
-9.6	-7.3	-7.1	-5.8	-4.6	-4.2	-2.9	-3.5	-5.9	-7.5	-14.8	-23.4	-19.0	-11.9	-11.8	-9.4	-6.6	-7.0	-7.4	-20.8	-13.8	-4.5	-7.3	-7.5	-12.6	-15.2	-15.9	-12.4	-17.4	-20.1	-22.5	-25.8	-25.5	-24.1	-16.5	-11.3
-13.2	-11.8	-9.1	-7.1	-5.1	-4.2	-4.0	-4.3	-5.7	-9.2	-7.5	-4.8	-3.5	-2.8	-4.5	-3.5	-3.6	-5.0	-4.0	-1.0	-2.4	-2.1	-1.8	-3.2	-3.9	-5.8	-4.3	-7.9	-9.0	-6.0	-6.3	-6.2	-8.0	-9.7	-14.9	-20.1
-9.2	-15.7	-16.1	-16.3	-16.8	-12.1	-9.2	-9.0	-6.9	-7.7	-9.2	-6.8	-11.2	-8.1	-9.8	-12.3	-7.7	-5.7	-5.3	.5	-2.2	-7.2	-8.6	-9.9	-6.3	-6.3	-5.5	-6.5	-6.7	-3.6	-4.3	-4.9	-5.4	-7.6	-12.8	-13.5
-14.7	-14.7	-16.6	-17.9	-18.2	-20.8	-19.3	-17.3	-14.6	-12.6	-10.2	-10.6	-17.8	-16.0	-15.4	-16.1	-17.8	-9.2	-9.7	-9.6	-7.9	-14.9	-16.1	-16.5	-13.0	-11.4	-10.2	-13.5	-11.2	-8.5	-7.2	-7.8	-6.7	-10.4	-12.9	-13.2
-14.4	-13.6	-13.4	-15.0	-14.5	-16.2	-16.8	-15.4	-15.7	-15.3	-12.9	-11.0	-13.4	-15.0	-14.9	-15.4	-14.5	-17.5	-14.9	-15.5	-12.8	-13.0	-13.4	-14.8	-14.8	-13.8	-16.1	-16.7	-14.9	-15.2	-15.8	-14.5	-15.6	-15.2	-16.8	-15.3
-14.1	-13.3	-14.3	-15.2	-15.2	-15.7	-16.5	-16.2	-16.1	-17.2	-16.6	-14.0	-13.1	-12.9	-13.9	-13.8	-13.7	-14.5	-14.3	-15.1	-15.1	-15.8	-16.4	-16.2	-15.6	-15.3	-14.3	-14.8	-16.5	-14.9	-16.4	-15.8	-15.7	-17.7	-18.3	-16.6
-16.5	-15.0	-13.6	-14.0	-13.5	-13.5	-14.3	-15.7	-17.0	-14.6	-14.1	-14.7	-16.4	-13.2	-12.4	-13.8	-12.5	-13.9	-14.1	-12.4	-11.8	-13.5	-14.2	-10.9	-13.0	-14.3	-12.4	-11.7	-9.8	-9.5	-11.1	-10.3	-12.7	-13.9	-17.2	-17.8
-12.6	-10.8	-9.9	-9.5	-9.2	-8.2	-7.9	-11.1	-8.1	-5.6	-8.8	-8.8	-13.9	-9.8	-8.8	-4.2	-4.4	-2.2	-1.0	.0	.4	2.0	2.6	2.7	.9	.0	2.4	5.0	5.7	4.8	3.9	2.7	1.2	.1	-7.9	-12.8
-7.2	-7.1	-5.8	.9	.6	.2	.6	3.2	5.5	1.4	-3.4	-6.1	-5.3	-3.6	-.9	2.0	2.9	4.1	4.2	4.2	3.3	2.8	3.9	4.8	4.3	4.9	4.3	3.9	4.0	3.9	3.6	3.1	2.1	2.5	-5.0	-8.0

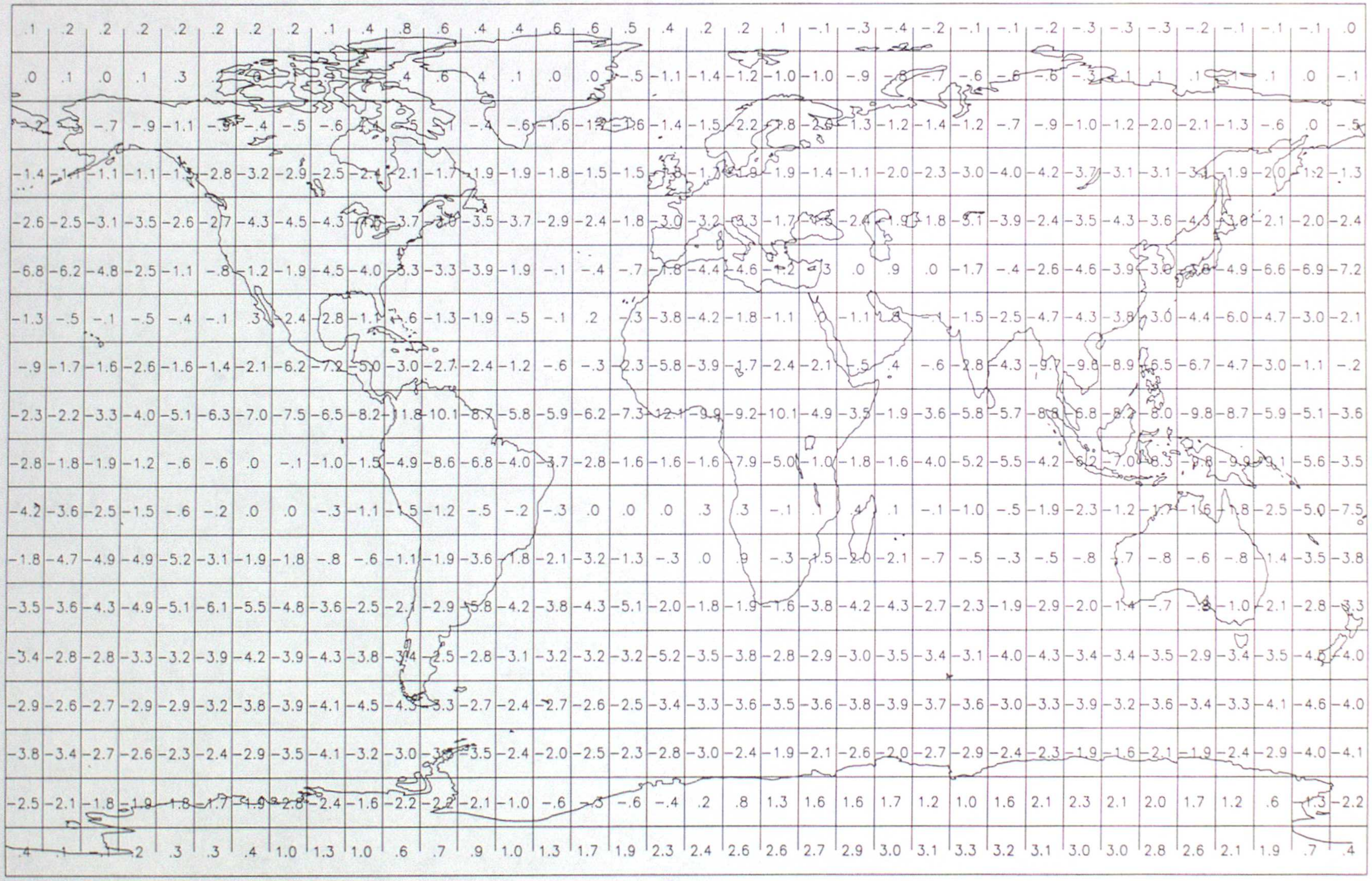
ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
MAY 2000 : HIRS8 channel (Surface)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 27



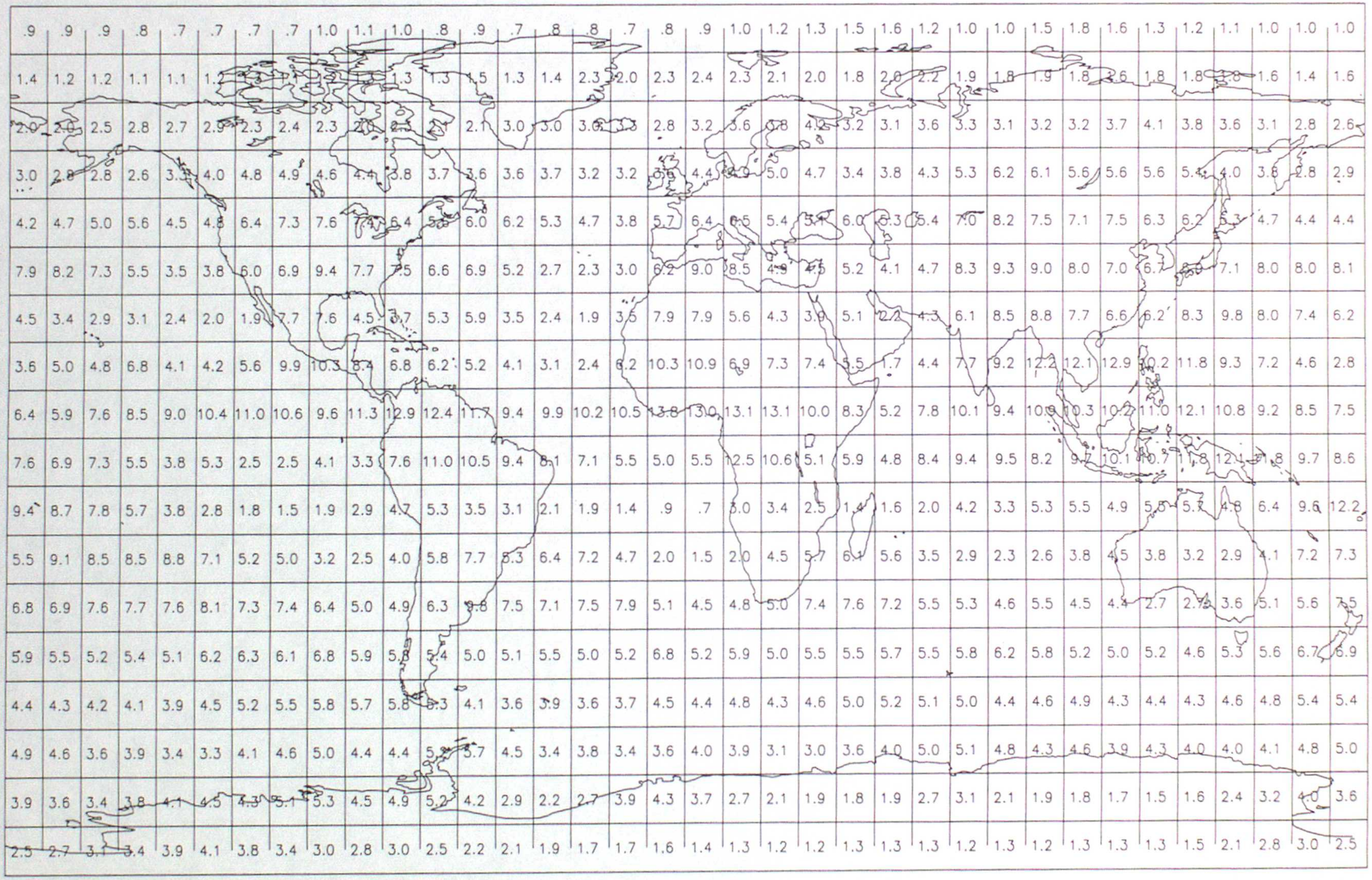
3.7	3.8	3.9	3.6	3.4	3.4	3.2	3.3	4.3	5.4	5.7	4.6	4.1	3.5	4.1	4.4	3.4	3.4	4.1	4.5	4.7	4.9	5.6	5.8	4.9	4.3	4.3	5.4	6.2	5.6	5.0	4.7	4.4	4.3	4.1	3.9
4.5	4.3	4.4	4.1	4.1	4.6	4.7	4.4	[illegible]	5.7	5.9	5.2	6.0	5.0	4.9	7.8	6.8	7.4	7.6	7.9	7.7	7.1	6.4	6.8	7.0	6.3	6.3	6.7	6.2	5.6	6.1	5.9	5.8	5.1	4.4	4.9
6.8	7.3	9.3	10.3	9.2	9.8	8.5	7.9	6.7	[illegible]	7.2	7.5	7.8	10.0	9.6	9.5	10.1	9.0	10.0	11.1	11.5	11.9	10.6	10.4	11.6	10.2	10.1	10.9	10.6	11.6	13.1	12.5	11.6	10.2	10.6	9.5
8.2	8.3	9.2	9.1	10.2	12.2	13.7	14.1	13.0	12.2	10.7	9.9	10.2	10.2	10.2	9.3	9.7	11.0	12.9	13.8	13.8	13.8	12.0	12.6	13.1	15.6	16.6	16.5	15.9	15.4	15.6	14.4	10.5	10.1	8.2	8.1
10.6	11.9	12.2	12.7	11.3	13.2	16.4	18.4	19.3	[illegible]	15.4	13.6	14.6	15.0	13.7	12.3	10.6	15.0	16.7	16.9	14.9	14.1	[illegible]	15.3	15.7	17.9	21.5	20.1	19.1	20.2	17.3	15.6	12.8	11.6	10.6	10.8
18.0	18.7	16.9	13.0	9.5	10.1	15.2	17.9	21.7	18.9	17.9	16.4	17.4	13.3	8.0	7.2	8.4	16.1	22.2	20.3	13.3	12.8	14.9	12.2	13.2	18.7	21.3	19.8	19.2	17.7	16.0	15.8	17.1	18.2	17.4	18.4
11.7	8.8	7.4	8.1	6.8	5.8	5.6	18.3	17.7	11.4	9.5	13.4	14.7	9.3	7.1	5.8	9.5	21.4	20.5	15.3	13.4	12.2	15.3	9.0	10.7	14.7	19.4	19.3	17.4	15.8	14.7	18.7	21.2	18.5	17.4	15.8
9.7	12.3	11.8	15.1	10.0	9.7	12.9	21.8	22.5	18.9	15.7	14.7	13.0	10.4	8.0	6.4	14.6	23.8	23.8	17.3	17.6	17.7	14.1	5.8	10.3	17.5	21.0	25.0	24.5	26.8	22.3	25.0	20.2	16.9	11.9	7.9
15.0	13.6	17.3	18.4	19.6	21.9	23.3	22.3	20.8	22.6	24.6	24.0	23.6	20.0	21.0	21.7	22.4	27.8	26.8	27.2	27.1	21.1	17.9	12.9	17.5	22.2	21.4	23.6	22.0	22.0	23.5	25.6	23.1	20.3	19.1	16.6
17.3	16.1	15.8	12.5	9.2	11.4	6.7	6.3	9.6	8.5	16.4	22.6	22.0	19.7	17.8	16.0	12.6	11.9	12.3	26.1	22.4	11.9	13.0	11.8	18.4	20.6	21.1	18.3	21.3	21.9	22.5	24.5	24.6	24.0	21.6	18.8
20.4	19.1	17.0	13.4	9.5	7.6	5.7	4.8	5.9	7.7	11.3	12.4	9.0	7.9	6.4	5.7	4.8	4.3	3.4	8.0	8.4	7.4	4.7	5.0	6.0	10.3	8.0	12.2	12.9	11.2	13.5	13.4	11.7	14.6	20.9	25.0
13.3	19.4	18.4	19.3	19.8	16.3	12.7	12.2	8.8	7.5	10.1	13.6	16.8	12.5	14.8	17.0	11.8	6.0	5.1	6.3	10.5	14.1	15.2	13.7	9.1	8.3	7.1	8.3	10.2	11.6	10.0	9.0	8.7	10.9	16.1	16.5
15.1	15.5	17.0	17.1	17.1	18.1	17.1	17.3	15.6	13.5	12.6	15.3	20.7	16.8	16.7	18.3	19.7	13.1	12.4	13.5	13.6	17.8	17.5	16.6	13.9	13.3	11.6	13.7	12.0	11.7	8.3	8.9	10.4	13.2	13.5	16.7
14.2	13.5	13.1	13.7	12.9	15.2	15.4	15.0	15.9	14.5	14.8	13.5	12.9	13.0	13.4	13.2	13.0	15.3	13.2	14.5	12.7	13.3	13.4	13.8	13.7	14.1	15.0	13.9	12.5	12.0	12.6	11.9	13.5	14.4	16.5	17.0
11.9	11.7	11.3	11.0	10.9	12.2	13.3	13.8	13.9	13.7	13.7	12.9	10.8	10.1	10.7	9.8	10.3	11.0	10.6	11.6	10.8	11.3	12.4	12.4	12.7	12.3	11.7	11.7	12.3	11.1	11.9	11.7	12.4	12.4	13.6	13.8
12.3	11.6	9.8	10.3	9.1	9.4	11.0	11.9	12.0	10.9	11.0	[illegible]	12.3	10.3	8.9	9.4	9.0	9.4	10.1	9.7	8.6	9.0	10.9	11.9	13.1	12.2	12.2	11.9	12.5	10.9	11.7	11.2	11.1	11.0	11.6	12.3
10.1	8.8	9.3	11.2	12.1	13.0	13.0	13.4	14.0	13.7	13.8	13.2	9.4	8.2	7.4	10.9	11.9	11.6	10.1	7.6	6.9	6.1	5.8	4.9	6.5	7.6	6.0	6.2	6.8	6.2	5.6	4.3	6.0	8.0	11.7	9.3
9.7	9.7	10.4	10.5	10.9	10.9	10.7	9.5	8.1	6.1	7.3	9.2	10.2	9.5	8.1	6.0	5.6	5.8	5.0	5.0	4.3	4.3	5.1	5.2	5.0	5.7	6.0	5.2	5.4	4.9	4.9	4.6	5.7	8.4	12.4	10.1

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C) FIGURE 28
MAY 2000 : HIRS15 Channel (700 hPa)
NOAA-15, USING ALL OBSERVATIONS


.1 .2 .2 .2 .2 .2 .2 .2 .1 .4 .8 .6 .4 .4 .6 .6 .5 .4 .2 .2 .1 −.1 −.3 −.4 −.2 −.1 −.1 −.2 −.3 −.3 −.3 −.2 −.1 −.1 −.1 .0
.0 .1 .0 .1 .3 .2 .0 [illegible] [illegible] [illegible] .4 .6 .4 .1 .0 .0 −.5 −1.1 −1.4 −1.2 −1.0 −1.0 −.9 −.8 −.7 −.6 −.6 −.6 −.3 .1 .1 .1 .1 .1 .0 −.1
−.2 [illegible] −.7 −.9 −1.1 −.9 −.4 −.5 −.6 −.4 −.5 −.1 −.4 −.6 −1.6 −1.2 −1.6 −1.4 −1.5 −2.2 −2.8 −2.0 −1.3 −1.2 −1.4 −1.2 −.7 −.9 −1.0 −1.2 −2.0 −2.1 −1.3 −.6 .0 −.5
−1.4 −1.1 −1.1 −1.1 −1.5 −2.8 −3.2 −2.9 −2.5 −2.4 −2.1 −1.7 −1.9 −1.9 −1.8 −1.5 −1.5 −1.8 −1.7 −1.9 −1.9 −1.4 −1.1 −2.0 −2.3 −3.0 −4.0 −4.2 −3.7 −3.1 −3.1 −3.4 −1.9 −2.0 −1.2 −1.3
−2.6 −2.5 −3.1 −3.5 −2.6 −2.7 −4.3 −4.5 −4.3 −4.0 −3.7 −3.0 −3.5 −3.7 −2.9 −2.4 −1.8 −3.0 −3.2 −3.3 −1.7 −1.5 −2.4 −1.9 −1.8 −3.1 −3.9 −2.4 −3.5 −4.3 −3.6 −4.3 −3.0 −2.1 −2.0 −2.4
−6.8 −6.2 −4.8 −2.5 −1.1 −.8 −1.2 −1.9 −4.5 −4.0 −3.3 −3.3 −3.9 −1.9 −.1 −.4 −.7 −1.8 −4.4 −4.6 −1.2 .3 .0 .9 .0 −1.7 −.4 −2.6 −4.6 −3.9 −3.0 −3.8 −4.9 −6.6 −6.9 −7.2
−1.3 −.5 −.1 −.5 −.4 −.1 .3 −2.4 −2.8 −1.1 −.6 −1.3 −1.9 −.5 −.1 .2 −.3 −3.8 −4.2 −1.8 −1.1 .0 −1.1 −.8 −.1 −1.5 −2.5 −4.7 −4.3 −3.8 −3.0 −4.4 −6.0 −4.7 −3.0 −2.1
−.9 −1.7 −1.6 −2.6 −1.6 −1.4 −2.1 −6.2 −7.2 −5.0 −3.0 −2.7 −2.4 −1.2 −.6 −.3 −2.3 −5.8 −3.9 −1.7 −2.4 −2.1 −.5 .4 −.6 −2.8 −4.3 −9.7 −9.8 −8.9 −6.5 −6.7 −4.7 −3.0 −1.1 −.2
−2.3 −2.2 −3.3 −4.0 −5.1 −6.3 −7.0 −7.5 −6.5 −8.2 −11.8 −10.1 −8.7 −5.8 −5.9 −6.2 −7.3 −12.1 −9.9 −9.2 −10.1 −4.9 −3.5 −1.9 −3.6 −5.8 −5.7 −8.8 −6.8 −8.2 −8.0 −9.8 −8.7 −5.9 −5.1 −3.6
−2.8 −1.8 −1.9 −1.2 −.6 −.6 .0 −.1 −1.0 −1.5 −4.9 −8.6 −6.8 −4.0 −3.7 −2.8 −1.6 −1.6 −1.6 −7.9 −5.0 −1.0 −1.8 −1.6 −4.0 −5.2 −5.5 −4.2 −6.2 −7.0 −8.3 −9.8 −9.9 −9.1 −5.6 −3.5
−4.2 −3.6 −2.5 −1.5 −.6 −.2 .0 .0 −.3 −1.1 −1.5 −1.2 −.5 −.2 −.3 .0 .0 .0 .3 .3 −.1 .1 .4 .1 −.1 −1.0 −.5 −1.9 −2.3 −1.2 −1.7 −1.6 −1.8 −2.5 −5.0 −7.5
−1.8 −4.7 −4.9 −4.9 −5.2 −3.1 −1.9 −1.8 −.8 −.6 −1.1 −1.9 −3.6 −1.8 −2.1 −3.2 −1.3 −.3 .0 .9 −.3 −1.5 −2.0 −2.1 −.7 −.5 −.3 −.5 −.8 −.7 −.8 −.6 −.8 −1.4 −3.5 −3.8
−3.5 −3.6 −4.3 −4.9 −5.1 −6.1 −5.5 −4.8 −3.6 −2.5 −2.1 −2.9 −5.8 −4.2 −3.8 −4.3 −5.1 −2.0 −1.8 −1.9 −1.6 −3.8 −4.2 −4.3 −2.7 −2.3 −1.9 −2.9 −2.0 −1.4 −.7 −.8 −1.0 −2.1 −2.8 −3.3
−3.4 −2.8 −2.8 −3.3 −3.2 −3.9 −4.2 −3.9 −4.3 −3.8 −3.4 −2.5 −2.8 −3.1 −3.2 −3.2 −3.2 −5.2 −3.5 −3.8 −2.8 −2.9 −3.0 −3.5 −3.4 −3.1 −4.0 −4.3 −3.4 −3.4 −3.5 −2.9 −3.4 −3.5 −4.5 −4.0
−2.9 −2.6 −2.7 −2.9 −2.9 −3.2 −3.8 −3.9 −4.1 −4.5 −4.3 −3.3 −2.7 −2.4 −2.7 −2.6 −2.5 −3.4 −3.3 −3.6 −3.5 −3.6 −3.8 −3.9 −3.7 −3.6 −3.0 −3.3 −3.9 −3.2 −3.6 −3.4 −3.3 −4.1 −4.6 −4.0
−3.8 −3.4 −2.7 −2.6 −2.3 −2.4 −2.9 −3.5 −4.1 −3.2 −3.0 [illegible] −3.5 −2.4 −2.0 −2.5 −2.3 −2.8 −3.0 −2.4 −1.9 −2.1 −2.6 −2.0 −2.7 −2.9 −2.4 −2.3 −1.9 −1.6 −2.1 −1.9 −2.4 −2.9 −4.0 −4.1
−2.5 −2.1 −1.8 −1.9 −1.8 −1.7 −1.9 −2.8 −2.4 −1.6 −2.2 −2.2 −2.1 −1.0 −.6 −.5 −.6 −.4 .2 .8 1.3 1.6 1.6 1.7 1.2 1.0 1.6 2.1 2.3 2.1 2.0 1.7 1.2 .6 −1.3 −2.2
.4 .1 −.1 .2 .3 .3 .4 1.0 1.3 1.0 .6 .7 .9 1.0 1.3 1.7 1.9 2.3 2.4 2.6 2.6 2.7 2.9 3.0 3.1 3.3 3.2 3.1 3.0 3.0 2.8 2.6 2.1 1.9 .7 .4

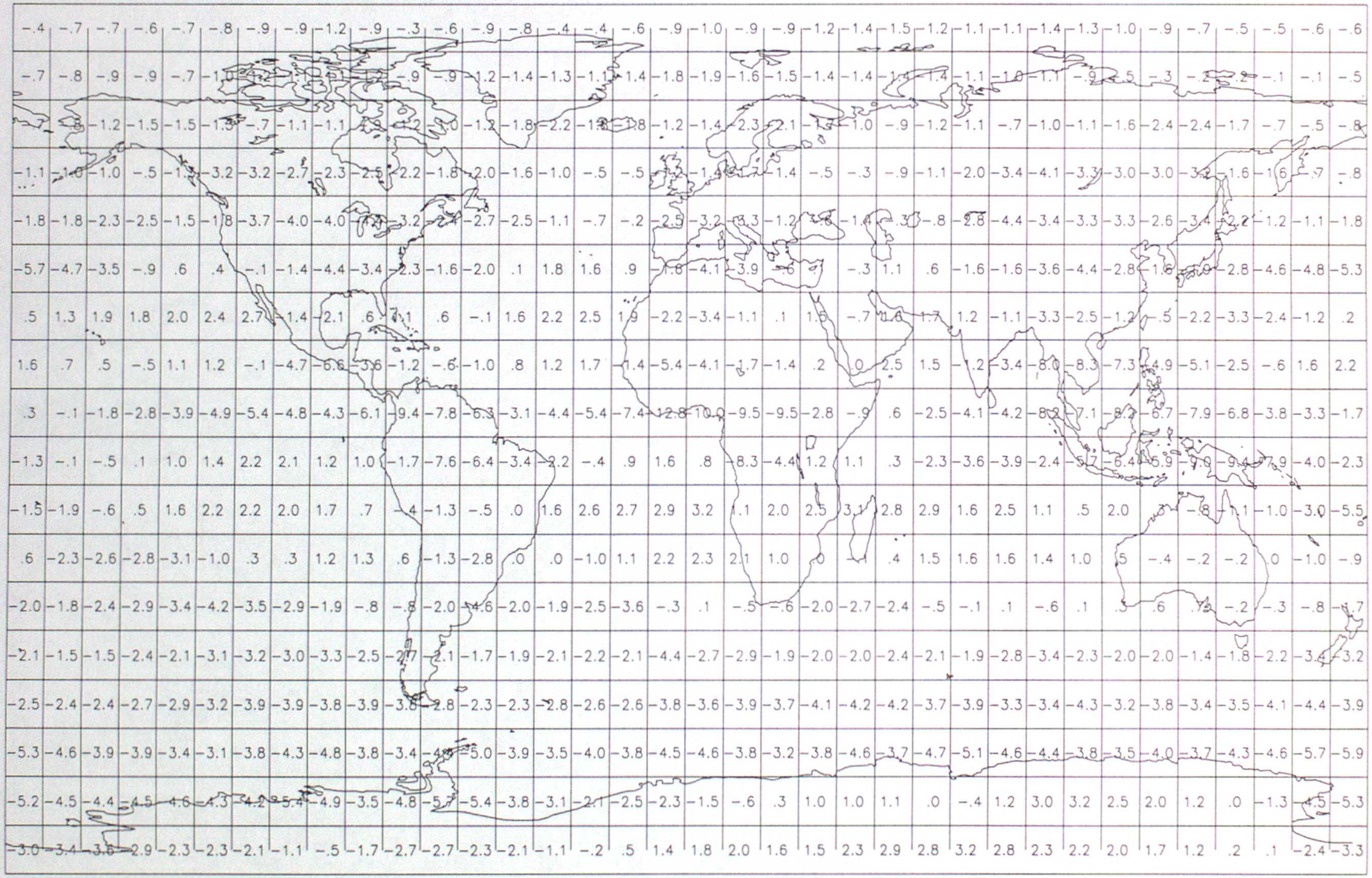
ATOVS : SD O−B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
MAY 2000 : HIRS15 channel (700 hPa)
NOAA−15, USING ALL OBSERVATIONS

FIGURE 29



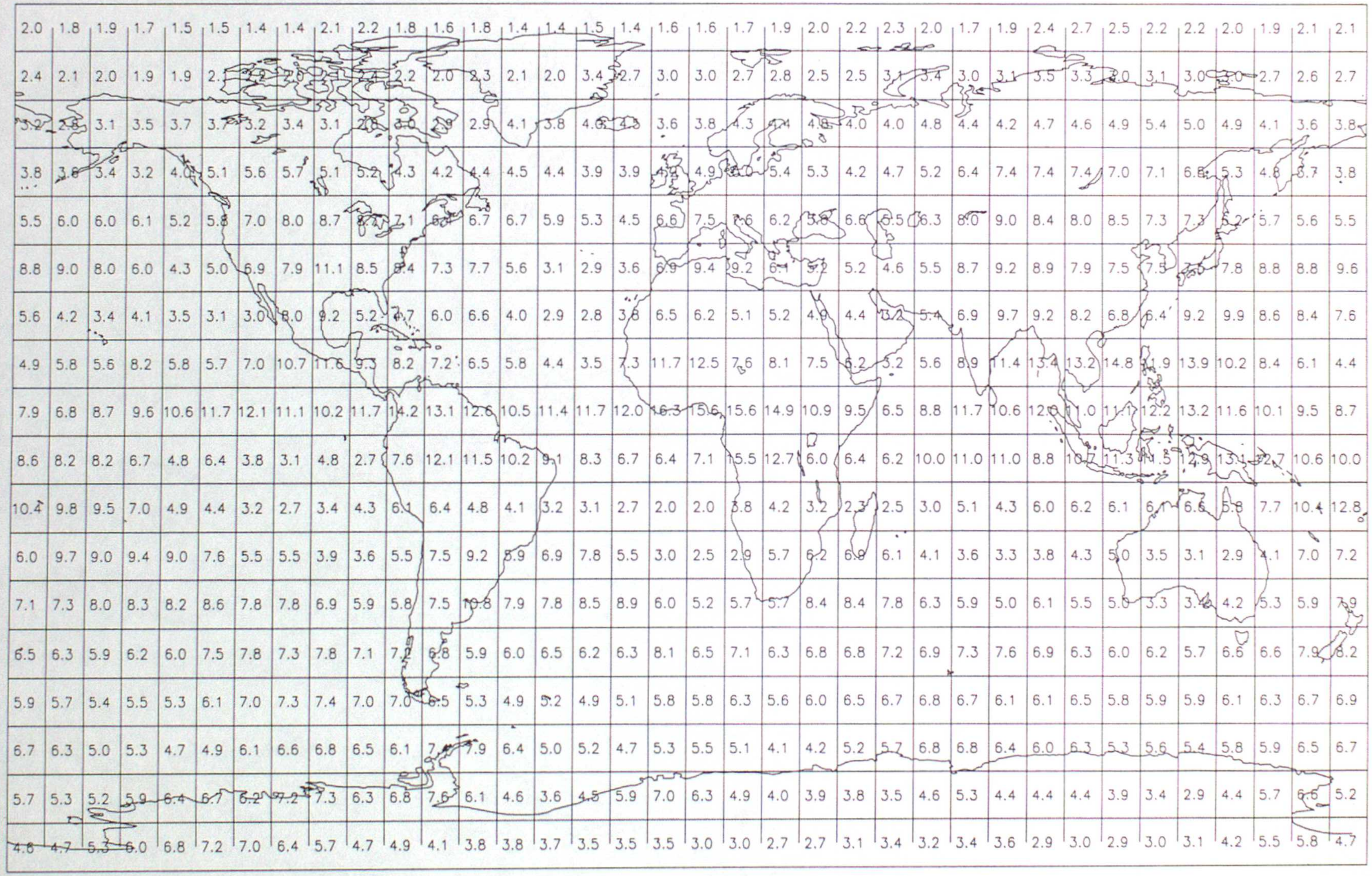
.9	.9	.9	.8	.7	.7	.7	.7	1.0	1.1	1.0	.8	.9	.7	.8	.8	.7	.8	.9	1.0	1.2	1.3	1.5	1.6	1.2	1.0	1.0	1.5	1.8	1.6	1.3	1.2	1.1	1.0	1.0	1.0
1.4	1.2	1.2	1.1	1.1	1.2	[illegible]	1.1	1.2	[illegible]	1.3	1.3	1.5	1.3	1.4	2.3	2.0	2.3	2.4	2.3	2.1	2.0	1.8	2.0	2.2	1.9	1.8	1.9	1.8	2.6	1.8	1.8	1.8	1.6	1.4	1.6
2.0	2.0	2.5	2.8	2.7	2.9	2.3	2.4	2.3	2.0	2.3	2.1	2.1	3.0	3.0	3.0	3.3	2.8	3.2	3.6	3.8	4.2	3.2	3.1	3.6	3.3	3.1	3.2	3.2	3.7	4.1	3.8	3.6	3.1	2.8	2.6
3.0	2.8	2.8	2.6	3.3	4.0	4.8	4.9	4.6	4.4	3.8	3.7	3.6	3.6	3.7	3.2	3.2	3.9	4.4	4.9	5.0	4.7	3.4	3.8	4.3	5.3	6.2	6.1	5.6	5.6	5.6	5.4	4.0	3.8	2.8	2.9
4.2	4.7	5.0	5.6	4.5	4.8	6.4	7.3	7.6	7.4	6.4	5.5	6.0	6.2	5.3	4.7	3.8	5.7	6.4	6.5	5.4	5.1	6.0	6.3	5.4	7.0	8.2	7.5	7.1	7.5	6.3	6.2	5.3	4.7	4.4	4.4
7.9	8.2	7.3	5.5	3.5	3.8	6.0	6.9	9.4	7.7	7.5	6.6	6.9	5.2	2.7	2.3	3.0	6.2	9.0	8.5	4.9	4.5	5.2	4.1	4.7	8.3	9.3	9.0	8.0	7.0	6.7	8.0	7.1	8.0	8.0	8.1
4.5	3.4	2.9	3.1	2.4	2.0	1.9	7.7	7.6	4.5	3.7	5.3	5.9	3.5	2.4	1.9	3.5	7.9	7.9	5.6	4.3	3.9	5.1	2.2	4.3	6.1	8.5	8.8	7.7	6.6	6.2	8.3	9.8	8.0	7.4	6.2
3.6	5.0	4.8	6.8	4.1	4.2	5.6	9.9	10.3	8.4	6.8	6.2	5.2	4.1	3.1	2.4	6.2	10.3	10.9	6.9	7.3	7.4	5.5	1.7	4.4	7.7	9.2	12.2	12.1	12.9	10.2	11.8	9.3	7.2	4.6	2.8
6.4	5.9	7.6	8.5	9.0	10.4	11.0	10.6	9.6	11.3	12.9	12.4	11.7	9.4	9.9	10.2	10.5	13.8	13.0	13.1	13.1	10.0	8.3	5.2	7.8	10.1	9.4	10.9	10.3	10.2	11.0	12.1	10.8	9.2	8.5	7.5
7.6	6.9	7.3	5.5	3.8	5.3	2.5	2.5	4.1	3.3	7.6	11.0	10.5	9.4	8.1	7.1	5.5	5.0	5.5	12.5	10.6	5.1	5.9	4.8	8.4	9.4	9.5	8.2	9.7	10.1	10.7	11.8	12.1	11.8	9.7	8.6
9.4	8.7	7.8	5.7	3.8	2.8	1.8	1.5	1.9	2.9	4.7	5.3	3.5	3.1	2.1	1.9	1.4	.9	.7	3.0	3.4	2.5	1.4	1.6	2.0	4.2	3.3	5.3	5.5	4.9	5.5	5.7	4.8	6.4	9.6	12.2
5.5	9.1	8.5	8.5	8.8	7.1	5.2	5.0	3.2	2.5	4.0	5.8	7.7	5.3	6.4	7.2	4.7	2.0	1.5	2.0	4.5	5.7	6.1	5.6	3.5	2.9	2.3	2.6	3.8	4.5	3.8	3.2	2.9	4.1	7.2	7.3
6.8	6.9	7.6	7.7	7.6	8.1	7.3	7.4	6.4	5.0	4.9	6.3	9.8	7.5	7.1	7.5	7.9	5.1	4.5	4.8	5.0	7.4	7.6	7.2	5.5	5.3	4.6	5.5	4.5	4.4	2.7	2.7	3.6	5.1	5.6	7.5
5.9	5.5	5.2	5.4	5.1	6.2	6.3	6.1	6.8	5.9	5.8	5.4	5.0	5.1	5.5	5.0	5.2	6.8	5.2	5.9	5.0	5.5	5.5	5.7	5.5	5.8	6.2	5.8	5.2	5.0	5.2	4.6	5.3	5.6	6.7	6.9
4.4	4.3	4.2	4.1	3.9	4.5	5.2	5.5	5.8	5.7	5.8	5.3	4.1	3.6	3.9	3.6	3.7	4.5	4.4	4.8	4.3	4.6	5.0	5.2	5.1	5.0	4.4	4.6	4.9	4.3	4.4	4.3	4.6	4.8	5.4	5.4
4.9	4.6	3.6	3.9	3.4	3.3	4.1	4.6	5.0	4.4	4.4	[illegible]	3.7	4.5	3.4	3.8	3.4	3.6	4.0	3.9	3.1	3.0	3.6	4.0	5.0	5.1	4.8	4.3	4.6	3.9	4.3	4.0	4.0	4.1	4.8	5.0
3.9	3.6	3.4	3.8	4.1	4.5	4.3	5.1	5.3	4.5	4.9	5.2	4.2	2.9	2.2	2.7	3.9	4.3	3.7	2.7	2.1	1.9	1.8	1.9	2.7	3.1	2.1	1.9	1.8	1.7	1.5	1.6	2.4	3.2	4.0	3.6
2.5	2.7	3.1	3.4	3.9	4.1	3.8	3.4	3.0	2.8	3.0	2.5	2.2	2.1	1.9	1.7	1.7	1.6	1.4	1.3	1.2	1.2	1.3	1.3	1.3	1.2	1.3	1.2	1.3	1.3	1.3	1.5	2.1	2.8	3.0	2.5

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C) FIGURE 30
MAY 2000 : HIRS11 Channel (500-700 hPa)
NOAA-15, USING ALL OBSERVATIONS


-.4 -.7 -.7 -.6 -.7 -.8 -.9 -.9 -1.2 -.9 -.3 -.6 -.9 -.8 -.4 -.4 -.6 -.9 -1.0 -.9 -.9 -1.2 -1.4 -1.5 -1.2 -1.1 -1.1 -1.4 -1.3 -1.0 -.9 -.7 -.5 -.5 -.6 -.6
-.7 -.8 -.9 -.9 -.7 -1.0 -1.2 [illegible] [illegible] -1.2 -.9 -.9 -1.2 -1.4 -1.3 -1.1 -1.4 -1.8 -1.9 -1.6 -1.5 -1.4 -1.4 -1.4 -1.4 -1.1 -1.0 -1.1 -.9 -.5 -.3 -.2 -.2 -.1 -.1 -.5
-.7 -.8 -1.2 -1.5 -1.5 -1.3 -.7 -1.1 -1.1 -.9 -1.2 -1.0 -1.2 -1.8 -2.2 -1.3 -1.8 -1.2 -1.4 -2.3 -2.1 -1.7 -1.0 -.9 -1.2 -1.1 -.7 -1.0 -1.1 -1.6 -2.4 -2.4 -1.7 -.7 -.5 -.8
-1.1 -1.0 -1.0 -.5 -1.3 -3.2 -3.2 -2.7 -2.3 -2.5 -2.2 -1.8 -2.0 -1.6 -1.0 -.5 -.5 -1.2 -1.4 -1.7 -1.4 -.5 -.3 -.9 -1.1 -2.0 -3.4 -4.1 -3.3 -3.0 -3.0 -3.2 -1.6 -1.6 -.7 -.8
-1.8 -1.8 -2.3 -2.5 -1.5 -1.8 -3.7 -4.0 -4.0 -4.2 -3.2 -2.4 -2.7 -2.5 -1.1 -.7 -.2 -2.5 -3.2 -3.3 -1.2 -.6 -1.4 -.3 -.8 -2.8 -4.4 -3.4 -3.3 -3.3 -2.6 -3.4 -2.2 -1.2 -1.1 -1.8
-5.7 -4.7 -3.5 -.9 .6 .4 -.1 -1.4 -4.4 -3.4 -2.3 -1.6 -2.0 .1 1.8 1.6 .9 -1.8 -4.1 -3.9 -.6 [illegible] -.3 1.1 .6 -1.6 -1.6 -3.6 -4.4 -2.8 -1.6 -1.0 -2.8 -4.6 -4.8 -5.3
.5 1.3 1.9 1.8 2.0 2.4 2.7 -1.4 -2.1 .6 -.1 .6 -.1 1.6 2.2 2.5 1.9 -2.2 -3.4 -1.1 .1 1.5 -.7 1.6 1.7 1.2 -1.1 -3.3 -2.5 -1.2 -.5 -2.2 -3.3 -2.4 -1.2 .2
1.6 .7 .5 -.5 1.1 1.2 -.1 -4.7 -6.6 -3.6 -1.2 -.6 -1.0 .8 1.2 1.7 -1.4 -5.4 -4.1 -1.7 -1.4 .2 .0 2.5 1.5 -1.2 -3.4 -8.0 -8.3 -7.3 -4.9 -5.1 -2.5 -.6 1.6 2.2
.3 -.1 -1.8 -2.8 -3.9 -4.9 -5.4 -4.8 -4.3 -6.1 -9.4 -7.8 -6.3 -3.1 -4.4 -5.4 -7.4 -12.8 -10.0 -9.5 -9.5 -2.8 -.9 .6 -2.5 -4.1 -4.2 -8.2 -7.1 -8.2 -6.7 -7.9 -6.8 -3.8 -3.3 -1.7
-1.3 -.1 -.5 .1 1.0 1.4 2.2 2.1 1.2 1.0 -1.7 -7.6 -6.4 -3.4 -2.2 -.4 .9 1.6 .8 -8.3 -4.4 1.2 1.1 .3 -2.3 -3.6 -3.9 -2.4 -5.7 -6.4 -5.9 -9.0 -9.4 -7.9 -4.0 -2.3
-1.5 -1.9 -.6 .5 1.6 2.2 2.2 2.0 1.7 .7 -.4 -1.3 -.5 .0 1.6 2.6 2.7 2.9 3.2 1.1 2.0 2.5 3.1 2.8 2.9 1.6 2.5 1.1 .5 2.0 .3 -.8 -1.1 -1.0 -3.0 -5.5
.6 -2.3 -2.6 -2.8 -3.1 -1.0 .3 .3 1.2 1.3 .6 -1.3 -2.8 .0 .0 -1.0 1.1 2.2 2.3 2.1 1.0 .0 -.1 .4 1.5 1.6 1.6 1.4 1.0 .5 -.4 -.2 -.2 .0 -1.0 -.9
-2.0 -1.8 -2.4 -2.9 -3.4 -4.2 -3.5 -2.9 -1.9 -.8 -.8 -2.0 -4.6 -2.0 -1.9 -2.5 -3.6 -.3 .1 -.5 -.6 -2.0 -2.7 -2.4 -.5 -.1 .1 -.6 .1 .3 .6 .7 -.2 -.3 -.8 -1.7
-2.1 -1.5 -1.5 -2.4 -2.1 -3.1 -3.2 -3.0 -3.3 -2.5 -2.7 -2.1 -1.7 -1.9 -2.1 -2.2 -2.1 -4.4 -2.7 -2.9 -1.9 -2.0 -2.0 -2.4 -2.1 -1.9 -2.8 -3.4 -2.3 -2.0 -2.0 -1.4 -1.8 -2.2 -3.4 -3.2
-2.5 -2.4 -2.4 -2.7 -2.9 -3.2 -3.9 -3.9 -3.8 -3.9 -3.8 -2.8 -2.3 -2.3 -2.8 -2.6 -2.6 -3.8 -3.6 -3.9 -3.7 -4.1 -4.2 -4.2 -3.7 -3.9 -3.3 -3.4 -4.3 -3.2 -3.8 -3.4 -3.5 -4.1 -4.4 -3.9
-5.3 -4.6 -3.9 -3.9 -3.4 -3.1 -3.8 -4.3 -4.8 -3.8 -3.4 [illegible] -5.0 -3.9 -3.5 -4.0 -3.8 -4.5 -4.6 -3.8 -3.2 -3.8 -4.6 -3.7 -4.7 -5.1 -4.6 -4.4 -3.8 -3.5 -4.0 -3.7 -4.3 -4.6 -5.7 -5.9
-5.2 -4.5 -4.4 -4.5 -4.6 -4.3 -4.2 -5.4 -4.9 -3.5 -4.8 -5.7 -5.4 -3.8 -3.1 -2.1 -2.5 -2.3 -1.5 -.6 .3 1.0 1.0 1.1 .0 -.4 1.2 3.0 3.2 2.5 2.0 1.2 .0 -1.3 -4.5 -5.3
-3.0 -3.4 -3.6 -2.9 -2.3 -2.3 -2.1 -1.1 -.5 -1.7 -2.7 -2.7 -2.3 -2.1 -1.1 -.2 .5 1.4 1.8 2.0 1.6 1.5 2.3 2.9 2.8 3.2 2.8 2.3 2.2 2.0 1.7 1.2 .2 .1 -2.4 -3.3

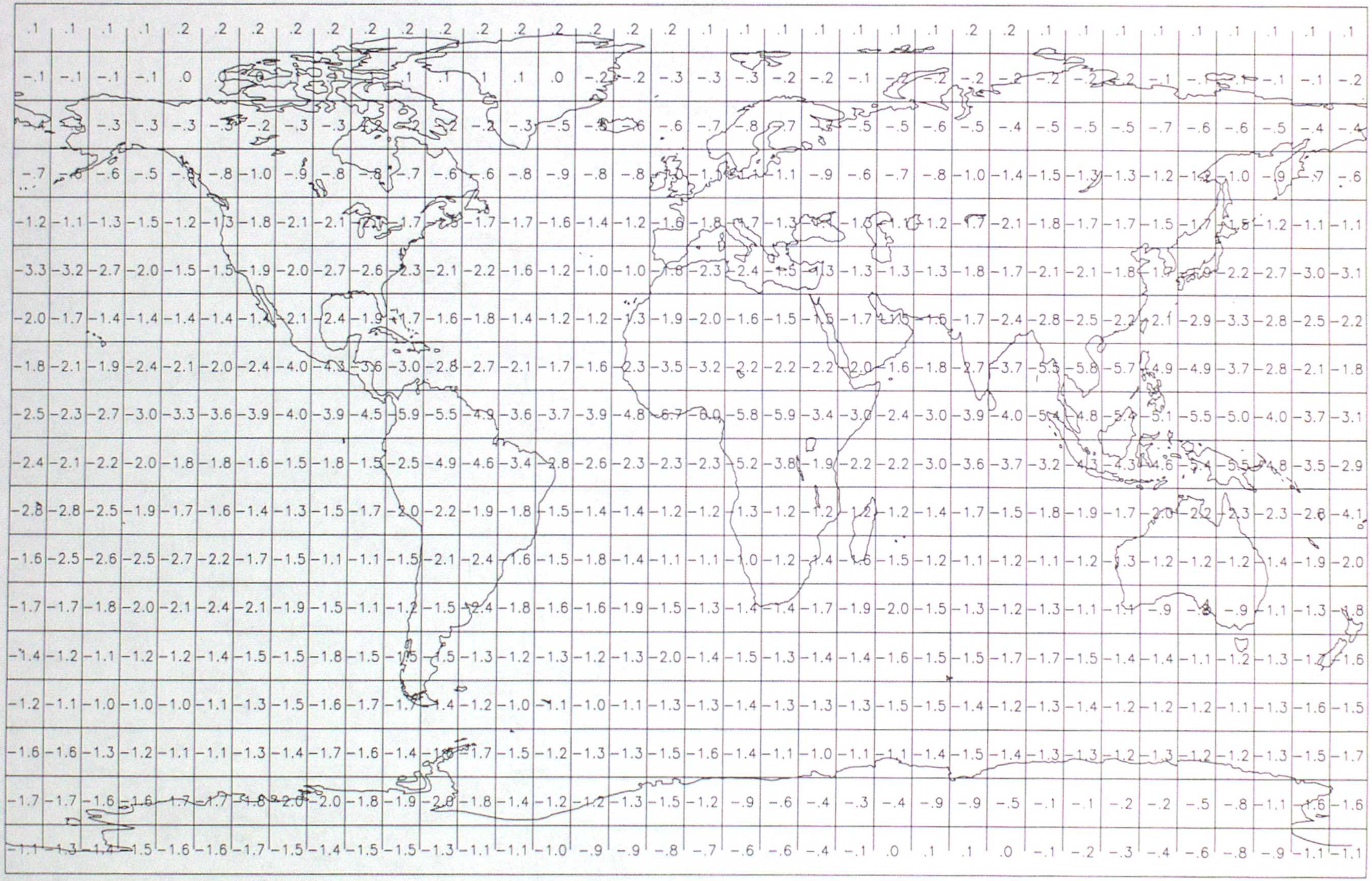
ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
MAY 2000 : HIRS11 channel (500–700 hPa)
NOAA–15, USING ALL OBSERVATIONS

FIGURE 31



2.0	1.8	1.9	1.7	1.5	1.5	1.4	1.4	2.1	2.2	1.8	1.6	1.8	1.4	1.4	1.5	1.4	1.6	1.6	1.7	1.9	2.0	2.2	2.3	2.0	1.7	1.9	2.4	2.7	2.5	2.2	2.2	2.0	1.9	2.1	2.1
2.4	2.1	2.0	1.9	1.9	[illegible]	2.2	2.0	2.1	2.4	2.2	2.0	2.3	2.1	2.0	3.4	2.7	3.0	3.0	2.7	2.8	2.5	2.5	3.1	3.4	3.0	3.1	3.5	3.3	3.0	3.1	3.0	3.0	2.7	2.6	2.7
3.2	2.8	3.1	3.5	3.7	3.7	3.2	3.4	3.1	2.8	3.0	2.9	2.9	4.1	3.8	4.6	4.5	3.6	3.8	4.3	4.4	4.8	4.0	4.0	4.8	4.4	4.2	4.7	4.6	4.9	5.4	5.0	4.9	4.1	3.6	3.8
3.8	3.6	3.4	3.2	4.0	5.1	5.6	5.7	5.1	5.2	4.3	4.2	4.4	4.5	4.4	3.9	3.9	4.9	4.9	6.0	5.4	5.3	4.2	4.7	5.2	6.4	7.4	7.4	7.4	7.0	7.1	6.8	5.3	4.8	3.7	3.8
5.5	6.0	6.0	6.1	5.2	5.8	7.0	8.0	8.7	8.7	7.1	6.4	6.7	6.7	5.9	5.3	4.5	6.6	7.5	7.6	6.2	5.8	6.6	6.5	6.3	8.0	9.0	8.4	8.0	8.5	7.3	7.3	5.2	5.7	5.6	5.5
8.8	9.0	8.0	6.0	4.3	5.0	6.9	7.9	11.1	8.5	8.4	7.3	7.7	5.6	3.1	2.9	3.6	6.9	9.4	9.2	6.1	5.2	5.2	4.6	5.5	8.7	9.2	8.9	7.9	7.5	7.5	7.5	7.8	8.8	8.8	9.6
5.6	4.2	3.4	4.1	3.5	3.1	3.0	8.0	9.2	5.2	4.7	6.0	6.6	4.0	2.9	2.8	3.8	6.5	6.2	5.1	5.2	4.9	4.4	3.2	5.4	6.9	9.7	9.2	8.2	6.8	6.4	9.2	9.9	8.6	8.4	7.6
4.9	5.8	5.6	8.2	5.8	5.7	7.0	10.7	11.6	9.3	8.2	7.2	6.5	5.8	4.4	3.5	7.3	11.7	12.5	7.6	8.1	7.5	6.2	3.2	5.6	8.9	11.4	13.4	13.2	14.8	11.9	13.9	10.2	8.4	6.1	4.4
7.9	6.8	8.7	9.6	10.6	11.7	12.1	11.1	10.2	11.7	14.2	13.1	12.6	10.5	11.4	11.7	12.0	16.3	15.6	15.6	14.9	10.9	9.5	6.5	8.8	11.7	10.6	12.0	11.0	11.1	12.2	13.2	11.6	10.1	9.5	8.7
8.6	8.2	8.2	6.7	4.8	6.4	3.8	3.1	4.8	2.7	7.6	12.1	11.5	10.2	9.1	8.3	6.7	6.4	7.1	15.5	12.7	6.0	6.4	6.2	10.0	11.0	11.0	8.8	10.7	11.3	11.5	12.9	13.1	12.7	10.6	10.0
10.4	9.8	9.5	7.0	4.9	4.4	3.2	2.7	3.4	4.3	6.1	6.4	4.8	4.1	3.2	3.1	2.7	2.0	2.0	3.8	4.2	3.2	2.3	2.5	3.0	5.1	4.3	6.0	6.2	6.1	6.1	6.6	5.8	7.7	10.4	12.8
6.0	9.7	9.0	9.4	9.0	7.6	5.5	5.5	3.9	3.6	5.5	7.5	9.2	5.9	6.9	7.8	5.5	3.0	2.5	2.9	5.7	6.2	6.9	6.1	4.1	3.6	3.3	3.8	4.3	5.0	3.5	3.1	2.9	4.1	7.0	7.2
7.1	7.3	8.0	8.3	8.2	8.6	7.8	7.8	6.9	5.9	5.8	7.5	10.8	7.9	7.8	8.5	8.9	6.0	5.2	5.7	5.7	8.4	8.4	7.8	6.3	5.9	5.0	6.1	5.5	5.0	3.3	3.4	4.2	5.3	5.9	7.9
6.5	6.3	5.9	6.2	6.0	7.5	7.8	7.3	7.8	7.1	7.2	6.8	5.9	6.0	6.5	6.2	6.3	8.1	6.5	7.1	6.3	6.8	6.8	7.2	6.9	7.3	7.6	6.9	6.3	6.0	6.2	5.7	6.6	6.6	7.9	8.2
5.9	5.7	5.4	5.5	5.3	6.1	7.0	7.3	7.4	7.0	7.0	6.5	5.3	4.9	5.2	4.9	5.1	5.8	5.8	6.3	5.6	6.0	6.5	6.7	6.8	6.7	6.1	6.1	6.5	5.8	5.9	5.9	6.1	6.3	6.7	6.9
6.7	6.3	5.0	5.3	4.7	4.9	6.1	6.6	6.8	6.5	6.1	[illegible]	7.9	6.4	5.0	5.2	4.7	5.3	5.5	5.1	4.1	4.2	5.2	5.7	6.8	6.8	6.4	6.0	6.3	5.3	5.6	5.4	5.8	5.9	6.5	6.7
5.7	5.3	5.2	5.9	6.4	6.7	6.2	7.2	7.3	6.3	6.8	7.6	6.1	4.6	3.6	4.5	5.9	7.0	6.3	4.9	4.0	3.9	3.8	3.5	4.6	5.3	4.4	4.4	4.4	3.9	3.4	2.9	4.4	5.7	6.6	5.2
4.8	4.7	5.3	6.0	6.8	7.2	7.0	6.4	5.7	4.7	4.9	4.1	3.8	3.8	3.7	3.5	3.5	3.5	3.0	3.0	2.7	2.7	3.1	3.4	3.2	3.4	3.6	2.9	3.0	2.9	3.0	3.1	4.2	5.5	5.8	4.7

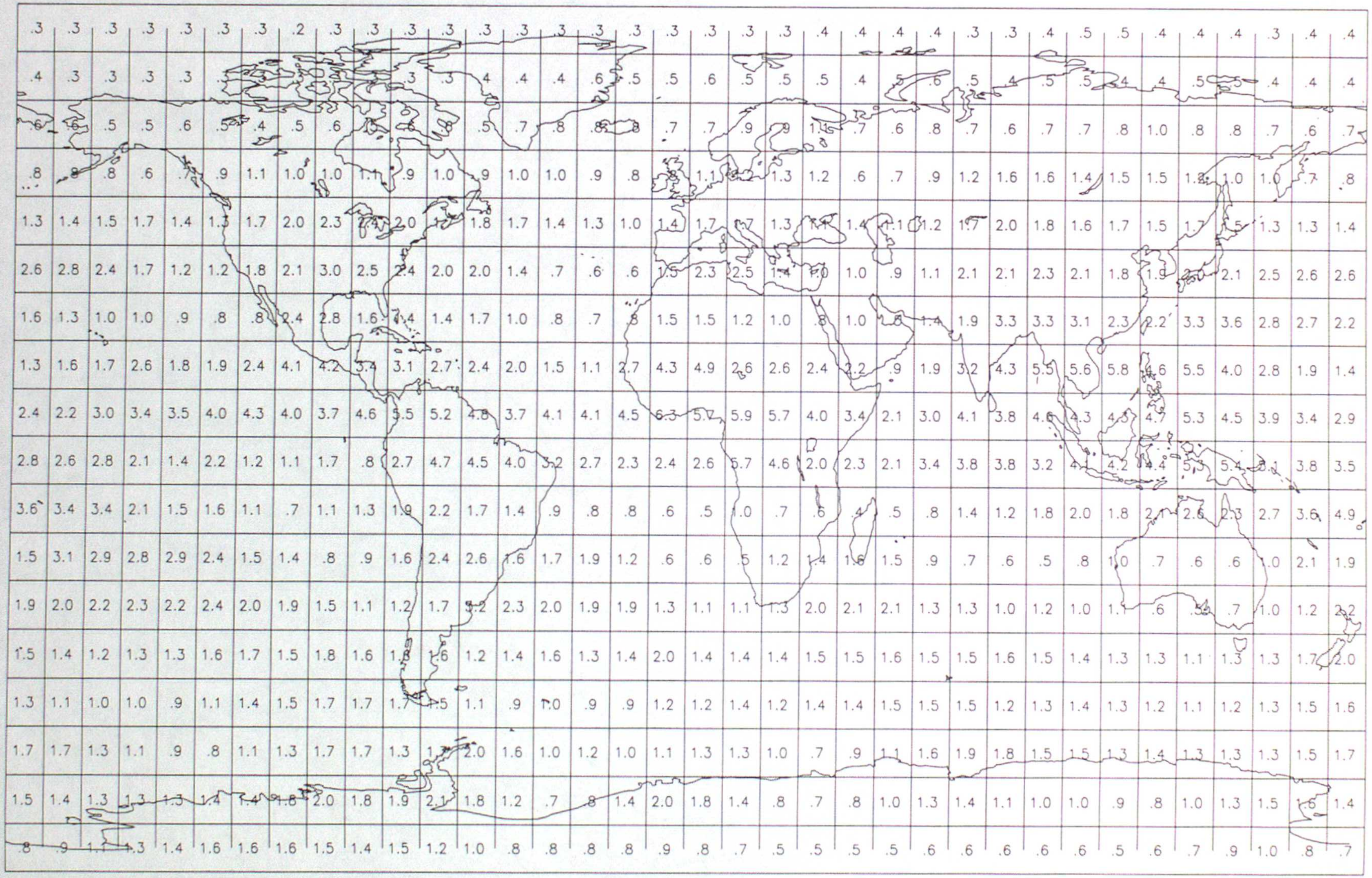
ATOVS : MEAN O–B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)   FIGURE 32
MAY 2000   : HIRS4 channel (400 hPa)
NOAA–15, USING ALL OBSERVATIONS



.1	.1	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1
-.1	-.1	-.1	-.1	.0	.0	.0	.1	.1	.1	.1	.1	.1	.1	.0	-.2	-.2	-.3	-.3	-.3	-.2	-.2	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	-.1	-.1	-.2
-.4	-.3	-.3	-.3	-.3	-.3	-.2	-.3	-.3	-.2	-.2	-.2	-.2	-.3	-.5	-.5	-.6	-.6	-.7	-.8	-.7	-.7	-.5	-.5	-.6	-.5	-.4	-.5	-.5	-.5	-.7	-.6	-.6	-.5	-.4	-.4
-.7	-.6	-.6	-.5	-.8	-.8	-1.0	-.9	-.8	-.8	-.7	-.6	-.6	-.8	-.9	-.8	-.8	-1.0	-1.1	-1.1	-1.1	-.9	-.6	-.7	-.8	-1.0	-1.4	-1.5	-1.3	-1.3	-1.2	-1.2	-1.0	-.9	-.7	-.6
-1.2	-1.1	-1.3	-1.5	-1.2	-1.3	-1.8	-2.1	-2.1	-2.0	-1.7	-1.5	-1.7	-1.7	-1.6	-1.4	-1.2	-1.6	-1.8	-1.7	-1.3	-1.1	-1.6	-1.1	-1.2	-1.7	-2.1	-1.8	-1.7	-1.7	-1.5	-1.7	-1.5	-1.2	-1.1	-1.1
-3.3	-3.2	-2.7	-2.0	-1.5	-1.5	-1.9	-2.0	-2.7	-2.6	-2.3	-2.1	-2.2	-1.6	-1.2	-1.0	-1.0	-1.8	-2.3	-2.4	-1.5	-1.3	-1.3	-1.3	-1.3	-1.8	-1.7	-2.1	-2.1	-1.8	-1.7	-2.0	-2.2	-2.7	-3.0	-3.1
-2.0	-1.7	-1.4	-1.4	-1.4	-1.4	-1.4	-2.1	-2.4	-1.9	-1.7	-1.6	-1.8	-1.4	-1.2	-1.2	-1.3	-1.9	-2.0	-1.6	-1.5	-1.5	-1.7	-1.5	-1.6	-1.7	-2.4	-2.8	-2.5	-2.2	-2.1	-2.9	-3.3	-2.8	-2.5	-2.2
-1.8	-2.1	-1.9	-2.4	-2.1	-2.0	-2.4	-4.0	-4.3	-3.6	-3.0	-2.8	-2.7	-2.1	-1.7	-1.6	-2.3	-3.5	-3.2	-2.2	-2.2	-2.2	-2.0	-1.6	-1.8	-2.7	-3.7	-5.5	-5.8	-5.7	-4.9	-4.9	-3.7	-2.8	-2.1	-1.8
-2.5	-2.3	-2.7	-3.0	-3.3	-3.6	-3.9	-4.0	-3.9	-4.5	-5.9	-5.5	-4.9	-3.6	-3.7	-3.9	-4.8	-6.7	-6.0	-5.8	-5.9	-3.4	-3.0	-2.4	-3.0	-3.9	-4.0	-5.4	-4.8	-5.4	-5.1	-5.5	-5.0	-4.0	-3.7	-3.1
-2.4	-2.1	-2.2	-2.0	-1.8	-1.8	-1.6	-1.5	-1.8	-1.5	-2.5	-4.9	-4.6	-3.4	-2.8	-2.6	-2.3	-2.3	-2.3	-5.2	-3.8	-1.9	-2.2	-2.2	-3.0	-3.6	-3.7	-3.2	-4.3	-4.3	-4.6	-5.4	-5.5	-4.8	-3.5	-2.9
-2.8	-2.8	-2.5	-1.9	-1.7	-1.6	-1.4	-1.3	-1.5	-1.7	-2.0	-2.2	-1.9	-1.8	-1.5	-1.4	-1.4	-1.2	-1.2	-1.3	-1.2	-1.2	-1.2	-1.2	-1.4	-1.7	-1.5	-1.8	-1.9	-1.7	-2.0	-2.2	-2.3	-2.3	-2.8	-4.1
-1.6	-2.5	-2.6	-2.5	-2.7	-2.2	-1.7	-1.5	-1.1	-1.1	-1.5	-2.1	-2.4	-1.6	-1.5	-1.8	-1.4	-1.1	-1.1	-1.0	-1.2	-1.4	-1.6	-1.5	-1.2	-1.1	-1.2	-1.1	-1.2	-1.3	-1.2	-1.2	-1.2	-1.4	-1.9	-2.0
-1.7	-1.7	-1.8	-2.0	-2.1	-2.4	-2.1	-1.9	-1.5	-1.1	-1.2	-1.5	-2.4	-1.8	-1.6	-1.6	-1.9	-1.5	-1.3	-1.4	-1.4	-1.7	-1.9	-2.0	-1.5	-1.3	-1.2	-1.3	-1.1	-1.1	-.9	-.8	-.9	-1.1	-1.3	-1.8
-1.4	-1.2	-1.1	-1.2	-1.2	-1.4	-1.5	-1.5	-1.8	-1.5	-1.5	-1.5	-1.3	-1.2	-1.3	-1.2	-1.3	-2.0	-1.4	-1.5	-1.3	-1.4	-1.4	-1.6	-1.5	-1.5	-1.7	-1.7	-1.5	-1.4	-1.4	-1.1	-1.2	-1.3	-1.7	-1.6
-1.2	-1.1	-1.0	-1.0	-1.0	-1.1	-1.3	-1.5	-1.6	-1.7	-1.7	-1.4	-1.2	-1.0	-1.1	-1.0	-1.1	-1.3	-1.3	-1.4	-1.3	-1.3	-1.3	-1.5	-1.5	-1.4	-1.2	-1.3	-1.4	-1.2	-1.2	-1.2	-1.1	-1.3	-1.6	-1.5
-1.6	-1.6	-1.3	-1.2	-1.1	-1.1	-1.3	-1.4	-1.7	-1.6	-1.4	-1.8	-1.7	-1.5	-1.2	-1.3	-1.3	-1.5	-1.6	-1.4	-1.1	-1.0	-1.1	-1.1	-1.4	-1.5	-1.4	-1.3	-1.3	-1.2	-1.3	-1.2	-1.2	-1.3	-1.5	-1.7
-1.7	-1.7	-1.6	-1.6	-1.7	-1.7	-1.8	-2.0	-2.0	-1.8	-1.9	-2.0	-1.8	-1.4	-1.2	-1.2	-1.3	-1.5	-1.2	-.9	-.6	-.4	-.3	-.4	-.9	-.9	-.5	-.1	-.1	-.2	-.2	-.5	-.8	-1.1	-1.6	-1.6
-1.1	-1.3	-1.4	-1.5	-1.6	-1.6	-1.7	-1.5	-1.4	-1.5	-1.5	-1.3	-1.1	-1.1	-1.0	-.9	-.9	-.8	-.7	-.6	-.6	-.4	-.1	.0	.1	.1	.0	-.1	-.2	-.3	-.4	-.6	-.8	-.9	-1.1	-1.1

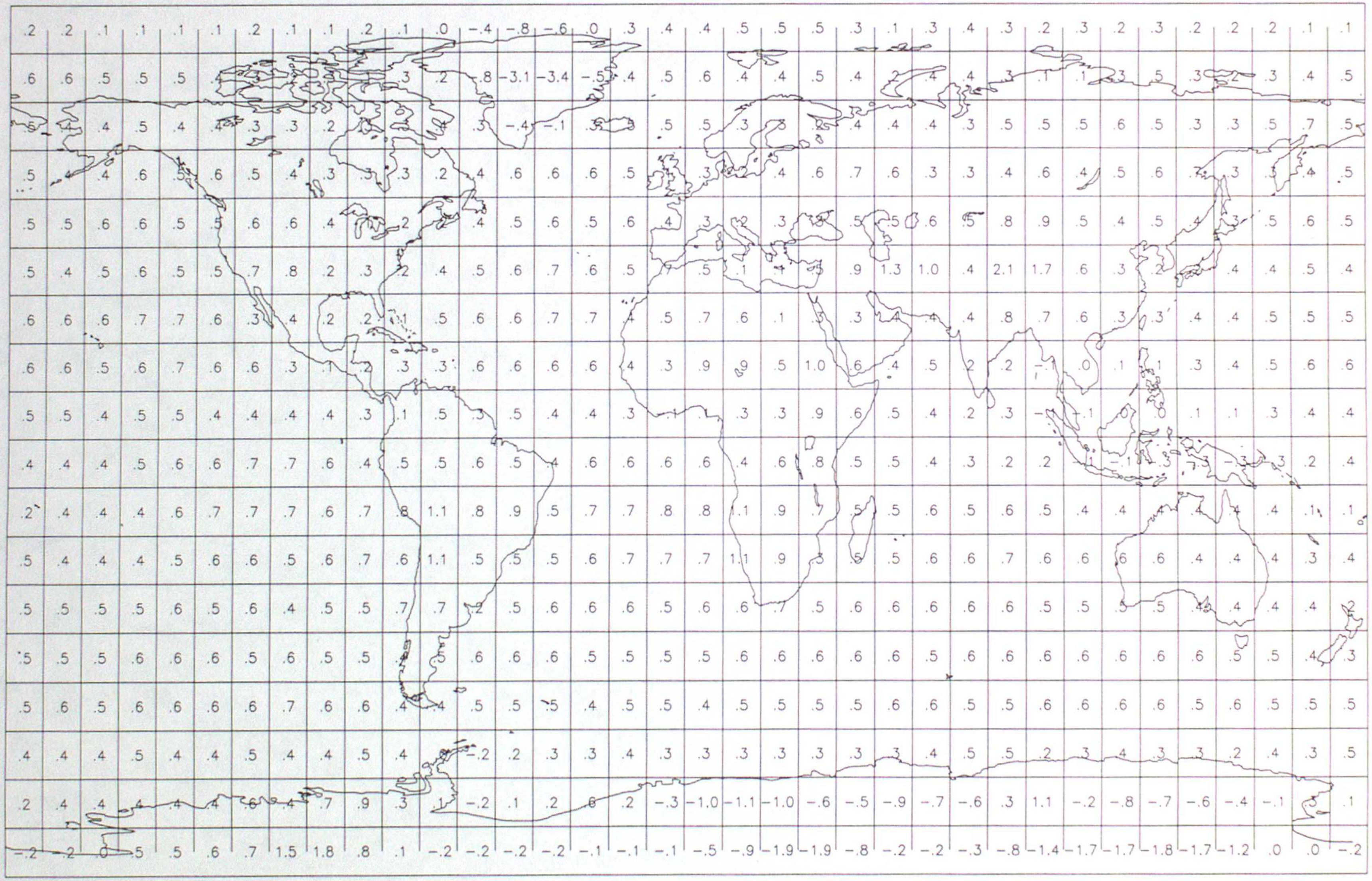
ATOVS : SD O–B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
MAY 2000 : HIRS4 channel (400 hPa)
NOAA–15, USING ALL OBSERVATIONS

FIGURE 33



.3	.3	.3	.3	.3	.3	.3	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.3	.3	.4	.5	.5	.4	.4	.4	.3	.4	.4
.4	.3	.3	.3	.3	.3	.3	[illegible]	.3	[illegible]	.3	.3	.4	.4	.4	.6	.5	.5	.6	.5	.5	.5	.4	.5	.6	.5	.4	.5	.5	.4	.4	.5	.5	.4	.4	.4
.6	.6	.5	.5	.6	.5	.4	.5	.6	.5	.6	.8	.5	.7	.8	.8	.8	.7	.7	.9	.9	1.1	.7	.6	.8	.7	.6	.7	.7	.8	1.0	.8	.8	.7	.6	.7
.8	.8	.8	.6	.7	.9	1.1	1.0	1.0	1.1	.9	1.0	.9	1.0	1.0	.9	.8	.8	1.1	1.2	1.3	1.2	.6	.7	.9	1.2	1.6	1.6	1.4	1.5	1.5	1.8	1.0	1.0	.7	.8
1.3	1.4	1.5	1.7	1.4	1.3	1.7	2.0	2.3	2.4	2.0	[illegible]	1.8	1.7	1.4	1.3	1.0	1.4	1.7	1.7	1.3	1.1	1.4	1.1	1.2	1.7	2.0	1.8	1.6	1.7	1.5	1.7	1.5	1.3	1.3	1.4
2.6	2.8	2.4	1.7	1.2	1.2	1.8	2.1	3.0	2.5	2.4	2.0	2.0	1.4	.7	.6	.6	1.5	2.3	2.5	1.4	1.0	1.0	.9	1.1	2.1	2.1	2.3	2.1	1.8	1.9	[illegible]	2.1	2.5	2.6	2.6
1.6	1.3	1.0	1.0	.9	.8	.8	2.4	2.8	1.6	1.4	1.4	1.7	1.0	.8	.7	.8	1.5	1.5	1.2	1.0	.8	1.0	.8	1.4	1.9	3.3	3.3	3.1	2.3	2.2	3.3	3.6	2.8	2.7	2.2
1.3	1.6	1.7	2.6	1.8	1.9	2.4	4.1	4.2	3.4	3.1	2.7	2.4	2.0	1.5	1.1	2.7	4.3	4.9	2.6	2.6	2.4	2.2	.9	1.9	3.2	4.3	5.5	5.6	5.8	4.6	5.5	4.0	2.8	1.9	1.4
2.4	2.2	3.0	3.4	3.5	4.0	4.3	4.0	3.7	4.6	5.5	5.2	4.8	3.7	4.1	4.1	4.5	6.3	5.7	5.9	5.7	4.0	3.4	2.1	3.0	4.1	3.8	4.6	4.3	4.3	4.7	5.3	4.5	3.9	3.4	2.9
2.8	2.6	2.8	2.1	1.4	2.2	1.2	1.1	1.7	.8	2.7	4.7	4.5	4.0	3.2	2.7	2.3	2.4	2.6	5.7	4.6	2.0	2.3	2.1	3.4	3.8	3.8	3.2	4.1	4.2	4.4	5.3	5.4	3.1	3.8	3.5
3.6	3.4	3.4	2.1	1.5	1.6	1.1	.7	1.1	1.3	1.9	2.2	1.7	1.4	.9	.8	.8	.6	.5	1.0	.7	.6	.4	.5	.8	1.4	1.2	1.8	2.0	1.8	2.1	2.6	2.3	2.7	3.6	4.9
1.5	3.1	2.9	2.8	2.9	2.4	1.5	1.4	.8	.9	1.6	2.4	2.6	1.6	1.7	1.9	1.2	.6	.6	.5	1.2	1.4	1.6	1.5	.9	.7	.6	.5	.8	1.0	.7	.6	.6	1.0	2.1	1.9
1.9	2.0	2.2	2.3	2.2	2.4	2.0	1.9	1.5	1.1	1.2	1.7	3.2	2.3	2.0	1.9	1.9	1.3	1.1	1.1	1.3	2.0	2.1	2.1	1.3	1.3	1.0	1.2	1.0	1.1	.6	.5	.7	1.0	1.2	2.2
1.5	1.4	1.2	1.3	1.3	1.6	1.7	1.5	1.8	1.6	1.8	1.6	1.2	1.4	1.6	1.3	1.4	2.0	1.4	1.4	1.4	1.5	1.5	1.6	1.5	1.5	1.6	1.5	1.4	1.3	1.3	1.1	1.3	1.3	1.7	2.0
1.3	1.1	1.0	1.0	.9	1.1	1.4	1.5	1.7	1.7	1.7	1.5	1.1	.9	1.0	.9	.9	1.2	1.2	1.4	1.2	1.4	1.4	1.5	1.5	1.5	1.2	1.3	1.4	1.3	1.2	1.1	1.2	1.3	1.5	1.6
1.7	1.7	1.3	1.1	.9	.8	1.1	1.3	1.7	1.7	1.3	1.7	2.0	1.6	1.0	1.2	1.0	1.1	1.3	1.3	1.0	.7	.9	1.1	1.6	1.9	1.8	1.5	1.5	1.3	1.4	1.3	1.3	1.3	1.5	1.7
1.5	1.4	1.3	1.3	1.3	1.4	1.4	1.8	2.0	1.8	1.9	2.1	1.8	1.2	.7	.8	1.4	2.0	1.8	1.4	.8	.7	.8	1.0	1.3	1.4	1.1	1.0	1.0	.9	.8	1.0	1.3	1.5	1.6	1.4
.8	.9	1.1	1.3	1.4	1.6	1.6	1.6	1.5	1.4	1.5	1.2	1.0	.8	.8	.8	.8	.9	.8	.7	.5	.5	.5	.5	.6	.6	.6	.6	.6	.5	.6	.7	.9	1.0	.8	.7

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)   FIGURE 34
MAY 2000   : AMSUA-5 Channel (700 hPa)
NOAA-15, USING ALL OBSERVATIONS



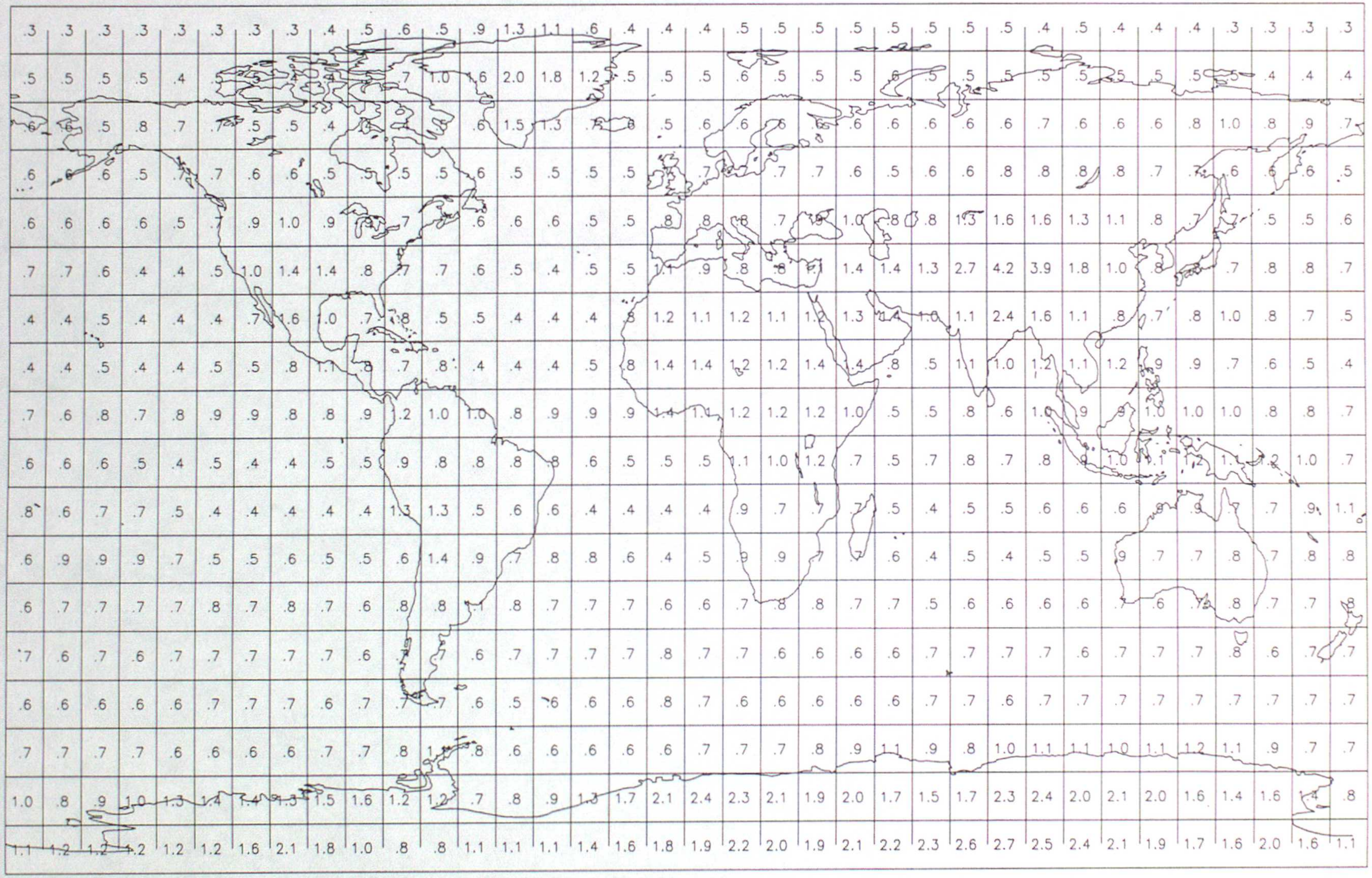
.2	.2	.1	.1	.1	.1	.2	.1	.1	.2	.1	.0	-.4	-.8	-.6	.0	.3	.4	.4	.5	.5	.5	.3	.1	.3	.4	.3	.2	.3	.2	.3	.2	.2	.2	.1	.1
.6	.6	.5	.5	.5	.4	.3	[illegible]	[illegible]	[illegible]	.3	.2	.8	-3.1	-3.4	-.5	.4	.5	.6	.4	.4	.5	.4	.2	.4	.4	.3	.1	.1	.3	.5	.3	.2	.3	.4	.5
.5	.4	.4	.5	.4	.4	.3	.3	.2	[illegible]	.3	.4	.3	-.4	-.1	.3	.3	.5	.5	.3	.3	.2	.4	.4	.4	.3	.5	.5	.5	.6	.5	.3	.3	.5	.7	.5
.5	.4	.4	.6	.5	.6	.5	.4	.3	.3	.3	.2	.4	.6	.6	.6	.5	[illegible]	.3	.2	.4	.6	.7	.6	.3	.3	.4	.6	.4	.5	.6	.7	.3	.3	.4	.5
.5	.5	.6	.6	.5	.5	.6	.6	.4	[illegible]	.2	.2	.4	.5	.6	.5	.6	.4	.3	.2	.3	.3	.5	.5	.6	.5	.8	.9	.5	.4	.5	.4	.3	.5	.6	.5
.5	.4	.5	.6	.5	.5	.7	.8	.2	.3	.2	.4	.5	.6	.7	.6	.5	.7	.5	.1	.1	.5	.9	1.3	1.0	.4	2.1	1.7	.6	.3	.2	[illegible]	.4	.4	.5	.4
.6	.6	.6	.7	.7	.6	.3	.4	.2	.2	.1	.5	.6	.6	.7	.7	.4	.5	.7	.6	.1	.3	.3	.4	.4	.4	.8	.7	.6	.3	.3	.4	.4	.5	.5	.5
.6	.6	.5	.6	.7	.6	.6	.3	.1	.2	.3	.3	.6	.6	.6	.6	.4	.3	.9	.9	.5	1.0	.6	.4	.5	.2	.2	-.1	.0	.1	.1	.3	.4	.5	.6	.6
.5	.5	.4	.5	.5	.4	.4	.4	.4	.3	.1	.5	.3	.5	.4	.4	.3	.1	.1	.3	.3	.9	.6	.5	.4	.2	.3	-.1	-.1	.0	.0	.1	.1	.3	.4	.4
.4	.4	.4	.5	.6	.6	.7	.7	.6	.4	.5	.5	.6	.5	.4	.6	.6	.6	.6	.4	.6	.8	.5	.5	.4	.3	.2	.2	-.1	-.1	-.3	-.3	-.3	-.3	.2	.4
.2	.4	.4	.4	.6	.7	.7	.7	.6	.7	.8	1.1	.8	.9	.5	.7	.7	.8	.8	1.1	.9	.7	.5	.5	.6	.5	.6	.5	.4	.4	.4	.4	.4	.4	.1	.1
.5	.4	.4	.4	.5	.6	.6	.5	.6	.7	.6	1.1	.5	.5	.5	.6	.7	.7	.7	1.1	.9	.3	.5	.5	.6	.6	.7	.6	.6	.6	.6	.4	.4	.4	.3	.4
.5	.5	.5	.5	.6	.5	.6	.4	.5	.5	.7	.7	.2	.5	.6	.6	.6	.5	.6	.6	.7	.5	.6	.6	.6	.6	.6	.5	.5	.5	.5	.4	.4	.4	.4	.2
.5	.5	.5	.6	.6	.6	.5	.6	.5	.5	.4	.5	.6	.6	.6	.5	.5	.5	.5	.6	.6	.6	.6	.6	.5	.6	.6	.6	.6	.6	.6	.6	.5	.5	.4	.3
.5	.6	.5	.6	.6	.6	.6	.7	.6	.6	.4	.4	.5	.5	.5	.4	.5	.5	.4	.5	.5	.5	.5	.6	.6	.5	.5	.6	.6	.6	.6	.5	.6	.5	.5	.5
.4	.4	.4	.5	.4	.4	.5	.4	.4	.5	.4	[illegible]	-.2	.2	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.4	.5	.5	.2	.3	.4	.3	.3	.2	.4	.3	.5
.2	.4	.4	.4	.4	.4	.6	.4	.7	.9	.3	.1	-.2	.1	.2	.6	.2	-.3	-1.0	-1.1	-1.0	-.6	-.5	-.9	-.7	-.6	.3	1.1	-.2	-.8	-.7	-.6	-.4	-.1	.3	.1
-.2	-.2	.0	.5	.5	.6	.7	1.5	1.8	.8	.1	-.2	-.2	-.2	-.2	-.1	-.1	-.1	-.5	-.9	-1.9	-1.9	-.8	-.2	-.2	-.3	-.8	-1.4	-1.7	-1.7	-1.8	-1.7	-1.2	.0	.0	-.2

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)

FIGURE 35

MAY 2000 : AMSUA-5 channel (700 hPa)

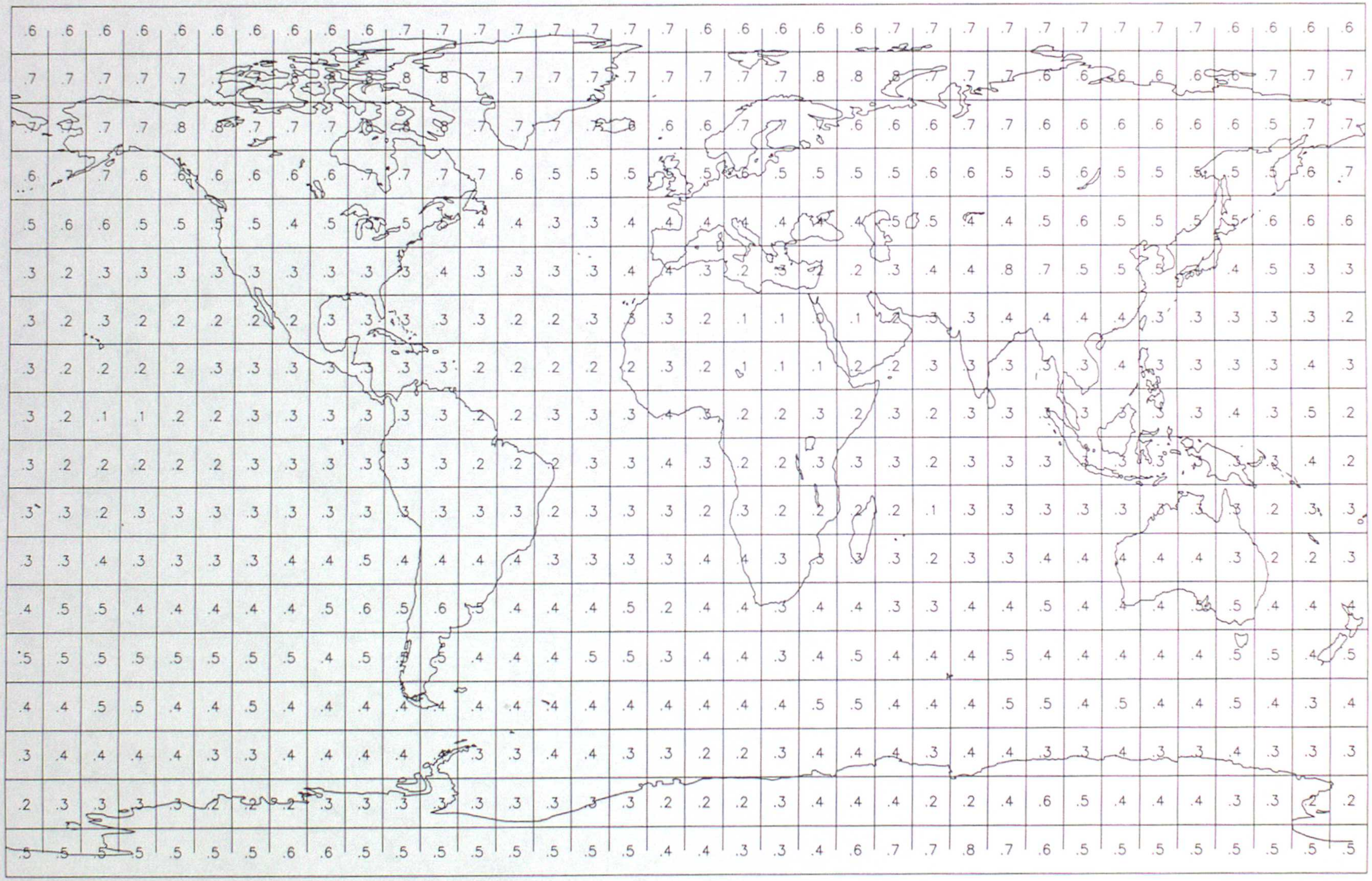
NOAA-15, USING ALL OBSERVATIONS



.3	.3	.3	.3	.3	.3	.3	.3	.4	.5	.6	.5	.9	1.3	1.1	.6	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.4	.4	.4	.3	.3	.3	.3
.5	.5	.5	.5	.4	.5	.5	.4	.4	[illegible]	.7	1.0	1.6	2.0	1.8	1.2	.5	.5	.5	.6	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4
.6	.6	.5	.8	.7	.7	.5	.5	.4	[illegible]	[illegible]	[illegible]	.6	1.5	1.3	.7	.8	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6	.7	.6	.6	.6	.8	1.0	.8	.9	.7
.6	.6	.6	.5	.7	.7	.6	.6	.5	.5	.5	.5	.6	.5	.5	.5	.5		.7		.7	.7	.6	.5	.6	.6	.8	.8	.8	.8	.7	.7	.6	.6	.6	.5
.6	.6	.6	.6	.5	.7	.9	1.0	.9	.9	.7		.6	.6	.6	.5	.5	.8	.8	.8	.7	.9	1.0	.8	.8	1.3	1.6	1.6	1.3	1.1	.8	.7	.7	.5	.5	.6
.7	.7	.6	.4	.4	.5	1.0	1.4	1.4	.8	.7	.7	.6	.5	.4	.5	.5	1.1	.9	.8	.8	1.1	1.4	1.4	1.3	2.7	4.2	3.9	1.8	1.0	.8	.8	.7	.8	.8	.7
.4	.4	.5	.4	.4	.4	.7	1.6	1.0	.7	.8	.5	.5	.4	.4	.4	.8	1.2	1.1	1.2	1.1	1.2	1.3	1.4	1.0	1.1	2.4	1.6	1.1	.8	.7	.8	1.0	.8	.7	.5
.4	.4	.5	.4	.4	.5	.5	.8	1.1	.8	.7	.8	.4	.4	.4	.5	.8	1.4	1.4	1.2	1.2	1.4	1.4	.8	.5	1.1	1.0	1.2	1.1	1.2	.9	.9	.7	.6	.5	.4
.7	.6	.8	.7	.8	.9	.9	.8	.8	.9	1.2	1.0	1.0	.8	.9	.9	.9	1.4	1.1	1.2	1.2	1.2	1.0	.5	.5	.8	.6	1.0	.9	.9	1.0	1.0	1.0	.8	.8	.7
.6	.6	.6	.5	.4	.5	.4	.4	.5	.5	.9	.8	.8	.8	.8	.6	.5	.5	.5	1.1	1.0	1.2	.7	.5	.7	.8	.7	.8	.9	1.0	1.1	1.2	1.1	1.2	1.0	.7
.8	.6	.7	.7	.5	.4	.4	.4	.4	.4	1.3	1.3	.5	.6	.6	.4	.4	.4	.4	.9	.7	.7	.7	.5	.4	.5	.5	.6	.6	.6	.9	.9	.7	.7	.9	1.1
.6	.9	.9	.9	.7	.5	.5	.6	.5	.5	.6	1.4	.9	.7	.8	.8	.6	.4	.5	.9	.9	.7	.7	.6	.4	.5	.4	.5	.5	.9	.7	.7	.8	.7	.8	.8
.6	.7	.7	.7	.7	.8	.7	.8	.7	.6	.8	.8	1.1	.8	.7	.7	.7	.6	.6	.7	.8	.8	.7	.7	.5	.6	.6	.6	.6	.7	.6	.7	.8	.7	.7	.8
.7	.6	.7	.6	.7	.7	.7	.7	.7	.6	.7	.7	.6	.7	.7	.7	.7	.8	.7	.7	.6	.6	.6	.6	.7	.7	.7	.7	.6	.7	.7	.7	.8	.6	.7	.7
.6	.6	.6	.6	.6	.7	.7	.7	.6	.7	.7	.7	.6	.5	.6	.6	.6	.8	.7	.6	.6	.6	.6	.6	.7	.7	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7
.7	.7	.7	.7	.6	.6	.6	.6	.7	.7	.8	[illegible]	.8	.6	.6	.6	.6	.6	.7	.7	.7	.8	.9	1.1	.9	.8	1.0	1.1	1.1	1.0	1.1	1.2	1.1	.9	.7	.7
1.0	.8	.9	1.0	1.3	1.4	1.4	1.3	1.5	1.6	1.2	1.2	.7	.8	.9	1.3	1.7	2.1	2.4	2.3	2.1	1.9	2.0	1.7	1.5	1.7	2.3	2.4	2.0	2.1	2.0	1.6	1.4	1.6	1.4	.8
1.1	1.2	1.2	1.2	1.2	1.2	1.6	2.1	1.8	1.0	.8	.8	1.1	1.1	1.1	1.4	1.6	1.8	1.9	2.2	2.0	1.9	2.1	2.2	2.3	2.6	2.7	2.5	2.4	2.1	1.9	1.7	1.6	2.0	1.6	1.1

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
MAY 2000 : AMSUA-7 Channel (300 hPa)
NOAA-15, USING ALL OBSERVATIONS

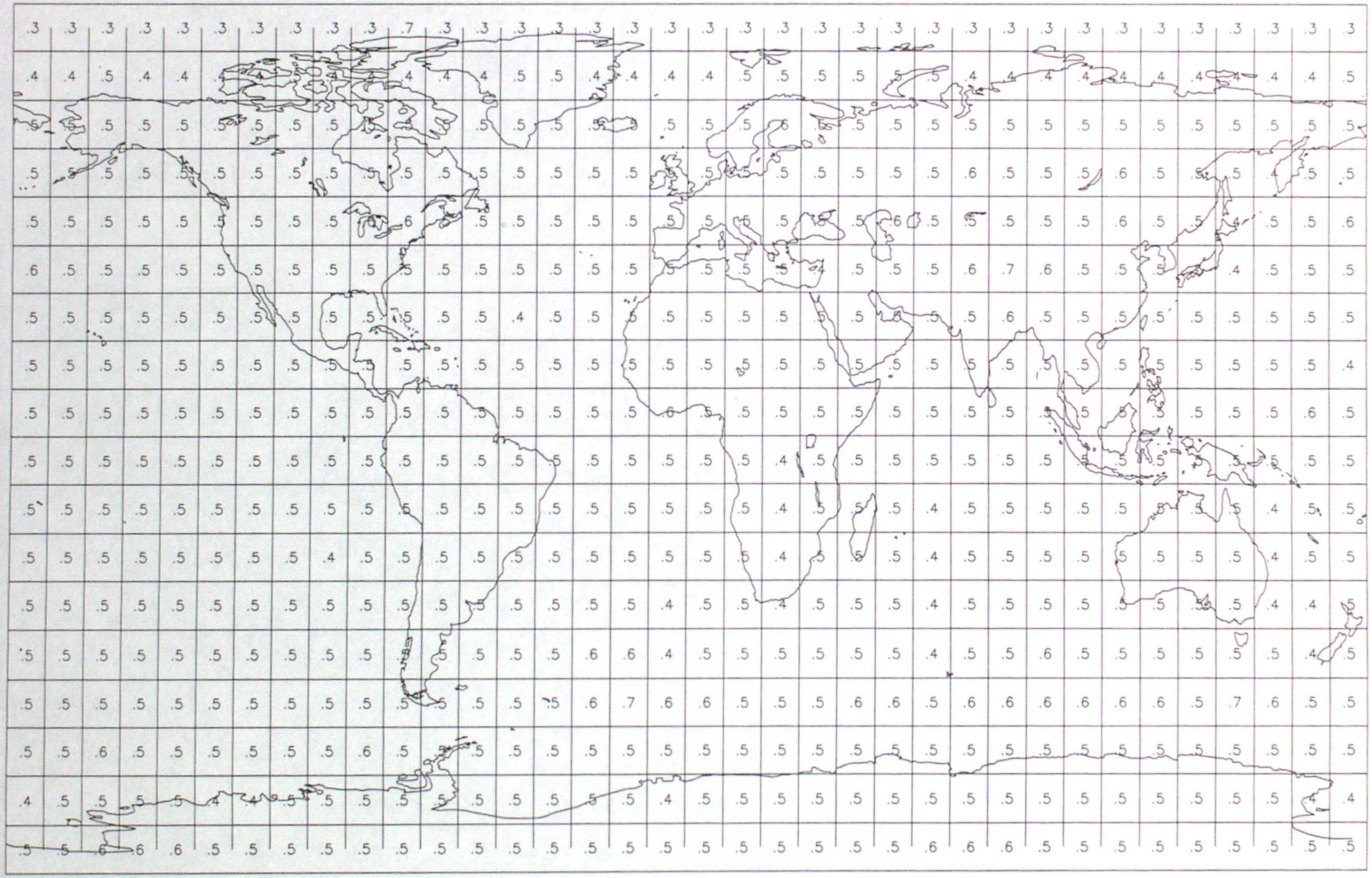
FIGURE 36



.6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .7 .7 .7 .7 .7 .7 .7 .7 .6 .6 .6 .6 .6 .7 .7 .7 .7 .7 .7 .7 .7 .7 .6 .6 .6 .6
.7 .7 .7 .7 .7 .7 .7 [illegible] .8 .8 .8 .8 .7 .7 .7 .7 .7 .7 .7 .7 .7 .8 .8 .8 .7 .7 .7 .6 .6 .6 .6 .6 .6 .7 .7 .7
.7 .7 .7 .7 .8 .8 .7 .7 .7 .8 .8 .8 .7 .7 .7 .7 .8 .6 .6 .7 .7 .7 .6 .6 .6 .7 .7 .6 .6 .6 .6 .6 .6 .5 .7 .7
.6 .7 .7 .6 .6 .6 .6 .6 .6 .7 .7 .7 .7 .6 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .6 .6 .5 .5 .6 .5 .5 .5 .5 .5 .6 .7
.5 .6 .6 .5 .5 .5 .5 .4 .5 .5 .5 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .5 .6 .5 .5 .5 .5 .6 .6 .6
.3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .4 .4 .3 .2 .3 .2 .2 .3 .4 .4 .8 .7 .5 .5 .5 .4 .5 .3 .3
.3 .2 .3 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .2 .2 .3 .3 .3 .2 .1 .1 .0 .1 .2 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .2
.3 .2 .2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .3 .2 .1 .1 .1 .2 .2 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .4 .3
.3 .2 .1 .1 .2 .2 .3 .3 .3 .3 .3 .3 .2 .2 .3 .3 .3 .4 .3 .2 .2 .3 .2 .3 .2 .3 .3 .3 .3 .3 .3 .3 .4 .3 .5 .2
.3 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .3 .2 .2 .2 .3 .3 .4 .3 .2 .2 .3 .3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .2
.3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .3 .3 .3 .2 .3 .2 .2 .2 .2 .1 .3 .3 .3 .3 .3 .3 .3 .3 .2 .3 .3
.3 .3 .4 .3 .3 .3 .3 .4 .4 .5 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .2 .3 .3 .4 .4 .4 .4 .4 .3 .2 .2 .3
.4 .5 .5 .4 .4 .4 .4 .4 .5 .6 .5 .6 .5 .4 .4 .4 .5 .2 .4 .4 .3 .4 .4 .3 .3 .4 .4 .5 .4 .4 .4 .5 .5 .4 .4 .4
.5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .4 .4 .4 .5 .5 .3 .4 .4 .3 .4 .5 .4 .4 .4 .5 .4 .4 .4 .4 .4 .5 .5 .4 .5
.4 .4 .5 .5 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .5 .5 .4 .5 .4 .4 .5 .4 .3 .4
.3 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .3 .3 .4 .4 .3 .3 .2 .2 .3 .4 .4 .4 .3 .4 .4 .3 .3 .4 .3 .3 .4 .3 .3 .3
.2 .3 .3 .3 .3 .2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .3 .4 .4 .4 .2 .2 .4 .6 .5 .4 .4 .4 .3 .3 .2 .2
.5 .5 .5 .5 .5 .5 .5 .6 .6 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .3 .3 .4 .6 .7 .7 .8 .7 .6 .5 .5 .5 .5 .5 .5 .5 .5

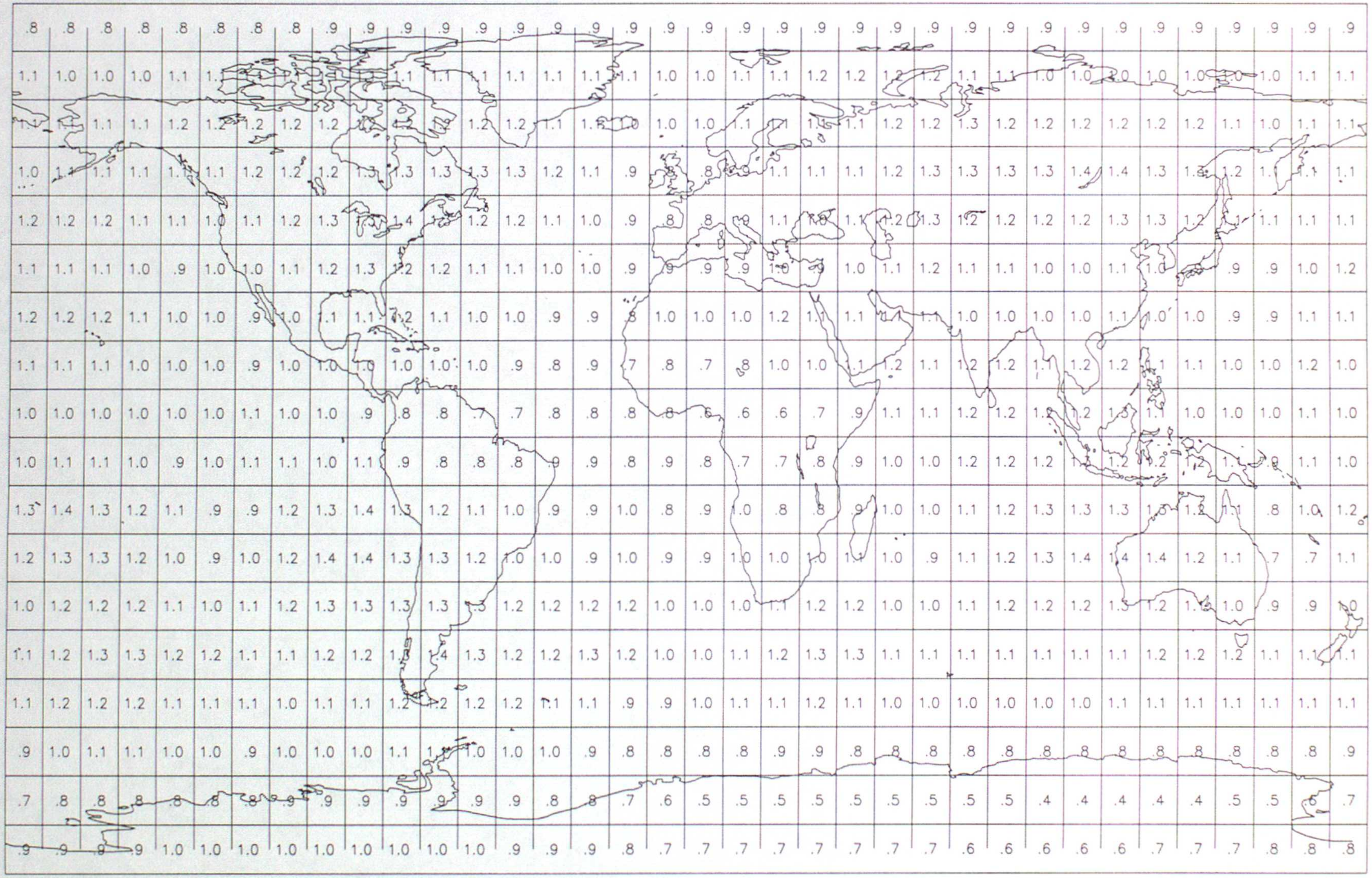
ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
MAY 2000 : AMSUA-7 channel (300 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 37



.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.7	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.4	.4	.5	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	[illegible]	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.6	.5	.5	.5	.4	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	[illegible]	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.6	.5	.5	.4	.5	.5	.6
.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.6	.7	.6	.5	.5	.5	[illegible]	.4	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.4	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.4	.5	.5	.5	.5	.5	.5	.4	.5	.5	.6	.5	.5	.5	.5	.5	.5	.4	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.7	.6	.6	.5	.5	.5	.6	.6	.5	.6	.6	.6	.6	.6	.6	.5	.7	.6	.5	.5
.5	.5	.6	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.4	.5	.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4
.5	.5	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C) FIGURE 38
MAY 2000 : AMSUA-9 Channel (100 hPa)
NOAA-15, USING ALL OBSERVATIONS



.8	.8	.8	.8	.8	.8	.8	.8	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
1.1	1.0	1.0	1.0	1.1	[illegible]	[illegible]	1.1	[illegible]	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1
1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.0	1.1	1.1
1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.1	.9	.8	.8	.9	1.1	1.1	1.1	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.3	1.3	1.2	1.1	1.1	1.1
1.2	1.2	1.2	1.1	1.1	1.0	1.1	1.2	1.3	1.3	1.4	[illegible]	1.2	1.2	1.1	1.0	.9	.8	.8	.9	1.1	1.0	1.1	1.2	1.3	1.2	1.2	1.2	1.2	1.3	1.3	1.2	1.1	1.1	1.1	1.1
1.1	1.1	1.1	1.0	.9	1.0	1.0	1.1	1.2	1.3	1.2	1.2	1.1	1.1	1.0	1.0	.9	.9	.9	.9	1.0	.9	1.0	1.1	1.2	1.1	1.1	1.0	1.0	1.1	1.0		.9	.9	1.0	1.2
1.2	1.2	1.2	1.1	1.0	1.0	.9	1.0	1.1	1.1	1.2	1.1	1.0	1.0	.9	.9	.8	1.0	1.0	1.0	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.1	1.0	1.0	.9	.9	1.1	1.1
1.1	1.1	1.1	1.0	1.0	1.0	.9	1.0	1.0	1.0	1.0	1.0	1.0	.9	.8	.9	.7	.8	.7	.8	1.0	1.0	1.1	1.2	1.1	1.2	1.2	1.1	1.2	1.2	1.1	1.1	1.0	1.0	1.2	1.0
1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0	.9	.8	.8	.7	.7	.8	.8	.8	.8	.6	.6	.6	.7	.9	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.1	1.0	1.0	1.0	1.1	1.0
1.0	1.1	1.1	1.0	.9	1.0	1.1	1.1	1.0	1.1	.9	.8	.8	.8	.9	.9	.8	.9	.8	.7	.7	.8	.9	1.0	1.0	1.2	1.2	1.2	[illegible]	1.2	1.2	1.2	[illegible]	.9	1.1	1.0
1.3	1.4	1.3	1.2	1.1	.9	.9	1.2	1.3	1.4	1.3	1.2	1.1	1.0	.9	.9	1.0	.8	.9	1.0	.8	.8	.9	1.0	1.0	1.1	1.2	1.3	1.3	1.3	1.3	1.2	1.1	.8	1.0	1.2
1.2	1.3	1.3	1.2	1.0	.9	1.0	1.2	1.4	1.4	1.3	1.3	1.2	1.0	1.0	.9	1.0	.9	.9	1.0	1.0	1.0	1.1	1.0	.9	1.1	1.2	1.3	1.4	1.4	1.4	1.2	1.1	.7	.7	1.1
1.0	1.2	1.2	1.2	1.1	1.0	1.1	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.0	1.0	1.0	1.1	1.2	1.2	1.0	1.0	1.1	1.2	1.2	1.2	1.3	1.2	[illegible]	1.0	.9	.9	1.0
1.1	1.2	1.3	1.3	1.2	1.2	1.1	1.1	1.2	1.2	1.3	1.4	1.3	1.2	1.2	1.3	1.2	1.0	1.0	1.1	1.2	1.3	1.3	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.1	1.1	1.1
1.1	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.1	1.1	.9	.9	1.0	1.1	1.1	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1
.9	1.0	1.1	1.1	1.0	1.0	.9	1.0	1.0	1.0	1.1	[illegible]	1.0	1.0	1.0	.9	.8	.8	.8	.8	.9	.9	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.9
.7	.8	.8	.8	.8	.8	.8	.9	.9	.9	.9	.9	.9	.9	.8	.8	.7	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.5	.5	.6	.7
.9	.9	.9	.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.9	.9	.9	.8	.7	.7	.7	.7	.7	.7	.7	.7	.6	.6	.6	.6	.6	.7	.7	.7	.8	.8	.8

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
MAY 2000 : AMSUA-9 channel (100 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 39

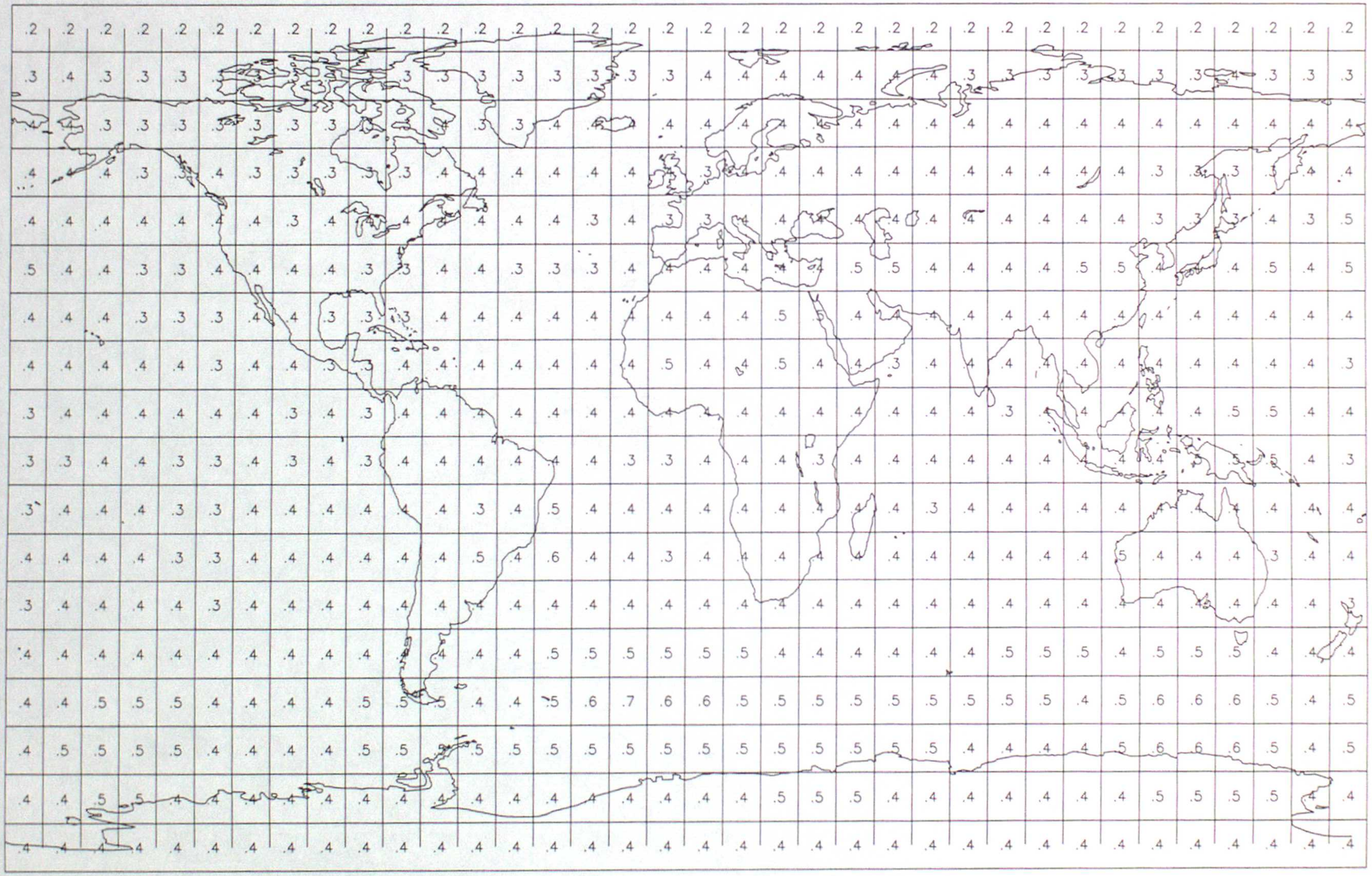


TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed ($m\ s^{-1}$) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 $m\ s^{-1}$ (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

MEAN SEA LEVEL PRESSURE

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
13501	20.0	-28.2	ALL	P	SUR	800	0	0	2.0	0.3	2.0
13509	10.0	-28.7	ALL	P	SUR	585	0	0	1.4	0.8	1.6
13510	38.3	-77.0	ALL	P	SUR	6	6	100			
13512	38.3	-77.0	ALL	P	SUR	4	4	100			
21607	38.3	-77.0	ALL	P	SUR	7	7	100			
23936	38.3	-77.0	ALL	P	SUR	12	12	100			
33661IT	25.3	-80.1	ALL	P	SUR	1	0	0	0.0	-0.3	0.3
40802	44.3	-52.4	ALL	P	SUR	1	0	0	0.0	1.7	1.7
41520	24.9	-45.4	ALL	P	SUR	189	0	0	2.1	-0.4	2.2
41521	29.8	-69.6	ALL	P	SUR	306	0	0	0.6	0.2	0.6
41524	18.2	-72.1	ALL	P	SUR	183	0	0	0.8	1.0	1.3
41571	21.7	-44.4	ALL	P	SUR	382	0	0	0.8	0.1	0.8
41572	20.0	-39.1	ALL	P	SUR	412	0	0	0.8	-0.1	0.8
41590	16.1	-45.1	ALL	P	SUR	231	0	0	0.5	0.4	0.6
41594	15.2	-43.2	ALL	P	SUR	244	0	0	0.5	0.5	0.7
41595	10.3	-45.7	ALL	P	SUR	245	0	0	0.4	0.7	0.8
41611	11.3	-40.1	ALL	P	SUR	207	0	0	0.6	0.9	1.0
41613	11.3	-33.3	ALL	P	SUR	204	0	0	0.6	0.9	1.1
41615	15.3	-36.5	ALL	P	SUR	221	0	0	0.5	0.4	0.7
41616	18.4	-35.1	ALL	P	SUR	233	0	0	0.5	0.4	0.6
41625	24.4	-75.4	ALL	P	SUR	29	0	0	0.8	0.0	0.8
41630	20.5	-50.7	ALL	P	SUR	331	0	0	0.6	0.1	0.6
41644	28.8	-35.2	ALL	P	SUR	314	0	0	0.7	-0.3	0.7
41651	31.2	-67.3	ALL	P	SUR	399	0	0	0.7	2.5	2.6
41671	25.4	-77.9	ALL	P	SUR	111	0	0	1.0	0.2	1.0
44607	55.1	-27.3	ALL	P	SUR	653	0	0	1.1	-0.3	1.2
44608	34.1	-13.2	ALL	P	SUR	1528	0	0	0.8	0.0	0.8
44610	53.7	-34.5	ALL	P	SUR	1581	0	0	1.4	-0.2	1.4
44611	45.4	-43.4	ALL	P	SUR	624	0	0	1.1	0.2	1.2
44612	36.6	-32.4	ALL	P	SUR	576	0	0	1.0	0.1	1.0
44613	24.4	-40.5	ALL	P	SUR	711	0	0	0.7	0.0	0.7
44615	34.6	-42.6	ALL	P	SUR	582	0	0	0.8	0.0	0.8
44617	47.5	-41.8	ALL	P	SUR	602	1	0	1.2	0.0	1.2
44620	33.9	-43.2	ALL	P	SUR	587	0	0	0.8	0.1	0.8
44622	51.9	-44.1	ALL	P	SUR	632	0	0	1.3	0.0	1.3
44623	47.3	-39.4	ALL	P	SUR	593	0	0	1.3	0.0	1.3
44626	48.4	-17.1	ALL	P	SUR	1423	1	0	1.1	0.0	1.1
44627	43.6	-28.4	ALL	P	SUR	1320	2	0	1.1	-0.1	1.1
44628	39.1	-42.5	ALL	P	SUR	1087	11	1	1.0	0.0	1.0
44630	50.8	-23.4	ALL	P	SUR	1478	8	1	1.2	-0.4	1.2
44723	46.1	-34.3	ALL	P	SUR	612	0	0	1.0	-0.2	1.0
44724	42.0	-32.9	ALL	P	SUR	574	0	0	0.9	-0.2	0.9
44725	42.4	-53.5	ALL	P	SUR	288	1	0	1.0	-0.4	1.0
44726	31.6	-55.5	ALL	P	SUR	585	0	0	0.8	0.0	0.8
44727	33.5	-36.7	ALL	P	SUR	532	1	0	0.7	0.1	0.7
44729	48.0	-42.0	ALL	P	SUR	603	0	0	1.2	0.1	1.2
44730	52.5	-39.4	ALL	P	SUR	638	0	0	1.1	0.1	1.1
44741	57.4	-34.6	ALL	P	SUR	633	0	0	1.2	0.1	1.2
44743	50.6	-39.8	ALL	P	SUR	869	0	0	1.1	-0.2	1.1
44765	31.8	-56.5	ALL	P	SUR	509	0	0	0.9	-0.3	0.9
44773	47.2	-31.3	ALL	P	SUR	1287	21	2	1.4	-0.4	1.4
44777	57.3	-16.1	ALL	P	SUR	1988	15	1	0.9	-0.2	1.0
44808	40.5	-69.4	ALL	P	SUR	1	0	0	0.0	0.3	0.3
46681	35.6	-75.6	ALL	P	SUR	46	46	100			
61531	48.4	-0.8	ALL	P	SUR	9	9	100			
62507	35.6	-29.8	ALL	P	SUR	1163	10	1	1.0	-0.6	1.1
62508	39.6	-18.2	ALL	P	SUR	734	11	1	1.6	-0.7	1.8
62509	46.0	-6.5	ALL	P	SUR	1121	0	0	0.9	-0.3	0.9
62512	44.6	-21.1	ALL	P	SUR	242	0	0	0.9	0.1	0.9
62513	45.1	-22.8	ALL	P	SUR	292	0	0	1.0	-0.9	1.4

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
62514	48.7	-20.6	ALL	P	SUR	761	0	0	1.4	-0.2	1.4
62515	49.6	-16.6	ALL	P	SUR	661	1	0	1.0	0.1	1.0
62516	46.4	-21.1	ALL	P	SUR	662	1	0	0.9	0.0	0.9
62520	32.2	-36.4	ALL	P	SUR	1012	5	0	0.7	-0.8	1.0
62596	60.9	-24.8	ALL	P	SUR	642	1	0	1.0	-0.2	1.1
62597	53.1	-14.6	ALL	P	SUR	1583	4	0	1.1	-0.2	1.2
62673	37.5	-10.3	ALL	P	SUR	152	0	0	0.6	-0.1	0.6
62674	38.9	-9.6	ALL	P	SUR	53	1	2	0.8	-0.9	1.2
62675	37.9	-10.9	ALL	P	SUR	217	0	0	0.7	-0.2	0.7
62701	50.6	-2.7	ALL	P	SUR	1	0	0	0.0	0.7	0.7
62705	55.0	-12.5	ALL	P	SUR	1	0	0	0.0	-0.9	0.9
62721	38.7	-9.5	ALL	P	SUR	25	0	0	0.9	-1.8	2.0
62722	38.1	-10.5	ALL	P	SUR	247	0	0	0.7	0.3	0.8
62723	38.6	-10.0	ALL	P	SUR	223	0	0	0.7	-0.5	0.9
62724	39.9	-7.9	ALL	P	SUR	171	0	0	1.1	-0.4	1.1
62725	36.7	-9.5	ALL	P	SUR	196	0	0	0.6	-0.2	0.6
62761	38.1	-10.1	ALL	P	SUR	222	0	0	0.7	-0.2	0.7
62762	38.0	-10.3	ALL	P	SUR	203	0	0	0.6	0.5	0.8
62763	37.4	-9.7	ALL	P	SUR	203	0	0	0.6	-0.3	0.7
62764	37.4	-8.9	ALL	P	SUR	129	0	0	0.8	-0.5	0.9
64517	57.2	-21.6	ALL	P	SUR	1238	0	0	0.8	-0.6	1.0
64546	50.9	-33.3	ALL	P	SUR	1269	7	1	1.3	-0.6	1.4
64548	60.6	-24.8	ALL	P	SUR	513	0	0	0.9	-0.6	1.1
64698	57.8	-38.5	ALL	P	SUR	1064	0	0	1.3	-0.8	1.5
64699	60.0	-56.0	ALL	P	SUR	1127	0	0	0.9	-0.2	1.0
65593	59.5	-35.2	ALL	P	SUR	692	0	0	1.4	-0.6	1.6
65598	62.4	-39.8	ALL	P	SUR	1468	6	0	1.4	0.0	1.4
65599	60.8	-40.2	ALL	P	SUR	2105	4	0	1.3	0.3	1.3
65600	55.3	-36.6	ALL	P	SUR	727	0	0	1.2	-0.9	1.5
65601	61.9	-34.4	ALL	P	SUR	1390	7	1	1.5	-0.4	1.5
65602	61.1	-39.1	ALL	P	SUR	1464	10	1	1.7	-0.4	1.8
74534	39.8	-81.6	ALL	P	SUR	31	30	97	0.0	-2.2	2.2
WIND SPEED											
33661IT	25.3	-80.1	ALL	SPEED	SUR	1	0	0	0.0	-0.6	0.6
40802	44.3	-52.4	ALL	SPEED	SUR	1	0	0	0.0	-0.3	0.3
41520	24.9	-45.4	ALL	SPEED	SUR	4	0	0	1.2	-1.3	1.7
41521	29.8	-69.6	ALL	SPEED	SUR	270	0	0	1.1	-1.0	1.5
41571	21.7	-44.4	ALL	SPEED	SUR	340	0	0	1.4	-0.8	1.6
41572	20.0	-39.1	ALL	SPEED	SUR	357	0	0	4.0	-0.4	4.0
41590	16.1	-45.1	ALL	SPEED	SUR	188	0	0	1.4	-0.1	1.4
41594	15.2	-43.2	ALL	SPEED	SUR	199	0	0	1.7	-0.2	1.8
41595	10.3	-45.7	ALL	SPEED	SUR	139	0	0	9.2	7.6	11.9
41611	11.3	-40.1	ALL	SPEED	SUR	204	0	0	1.3	-0.7	1.5
41613	11.3	-33.3	ALL	SPEED	SUR	202	0	0	1.5	-0.4	1.5
41615	15.3	-36.5	ALL	SPEED	SUR	214	0	0	1.3	-0.3	1.3
41616	18.4	-35.1	ALL	SPEED	SUR	231	0	0	1.4	0.0	1.4
41625	24.4	-75.4	ALL	SPEED	SUR	29	0	0	1.7	-2.2	2.7
41630	20.5	-50.7	ALL	SPEED	SUR	318	0	0	1.6	-1.1	1.9
41644	28.8	-35.2	ALL	SPEED	SUR	4	0	0	0.2	-1.7	1.7
41651	31.2	-67.3	ALL	SPEED	SUR	18	0	0	3.0	3.0	4.3
44607	55.1	-27.3	ALL	SPEED	SUR	642	0	0	2.0	1.1	2.3
44724	42.0	-32.9	ALL	SPEED	SUR	562	0	0	2.3	0.2	2.3
44726	31.6	-55.5	ALL	SPEED	SUR	577	0	0	2.3	-0.1	2.3
44727	33.5	-36.7	ALL	SPEED	SUR	167	0	0	5.0	-2.0	5.4
44777	57.3	-16.1	ALL	SPEED	SUR	1489	0	0	2.0	-2.9	3.5
44808	40.5	-69.4	ALL	SPEED	SUR	1	0	0	0.0	0.5	0.5
62506	36.7	-24.3	ALL	SPEED	SUR	638	0	0	2.1	0.3	2.1
62508	39.6	-18.2	ALL	SPEED	SUR	690	0	0	1.7	0.1	1.7

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND SPEED											
62597	53.1	-14.6	ALL	SPEED	SUR	1452	0	0	2.3	-1.9	3.0
62675	37.9	-10.9	ALL	SPEED	SUR	62	0	0	2.2	5.5	5.9
62705	55.0	-12.5	ALL	SPEED	SUR	1	0	0	0.0	-2.1	2.1
62722	38.1	-10.5	ALL	SPEED	SUR	89	0	0	2.0	5.4	5.8
62725	36.7	-9.5	ALL	SPEED	SUR	54	0	0	1.5	5.8	6.0
62761	38.1	-10.1	ALL	SPEED	SUR	14	0	0	0.6	6.3	6.4
62762	38.0	-10.3	ALL	SPEED	SUR	42	0	0	1.1	6.3	6.4
62763	37.4	-9.7	ALL	SPEED	SUR	56	0	0	1.8	4.9	5.3
WIND DIRECTION											
33661IT	25.3	-80.1	ALL	DIRN.	SUR	1	0	0	0.0	-5.5	5.5
40802	44.3	-52.4	ALL	DIRN.	SUR	1	0	0	0.0	-1.1	1.1
41521	29.8	-69.6	ALL	DIRN.	SUR	160	0	0	16.9	-14.2	22.1
41571	21.7	-44.4	ALL	DIRN.	SUR	150	0	0	14.2	8.2	16.4
41572	20.0	-39.1	ALL	DIRN.	SUR	176	0	0	16.0	6.6	17.3
41590	16.1	-45.1	ALL	DIRN.	SUR	187	0	0	13.5	4.7	14.3
41594	15.2	-43.2	ALL	DIRN.	SUR	198	0	0	11.4	40.0	41.6
41595	10.3	-45.7	ALL	DIRN.	SUR	125	0	0	10.4	1.5	10.5
41611	11.3	-40.1	ALL	DIRN.	SUR	204	0	0	10.3	19.9	22.5
41613	11.3	-33.3	ALL	DIRN.	SUR	202	0	0	12.1	-0.6	12.2
41615	15.3	-36.5	ALL	DIRN.	SUR	214	0	0	11.1	2.3	11.4
41616	18.4	-35.1	ALL	DIRN.	SUR	223	0	0	10.4	0.6	10.4
41625	24.4	-75.4	ALL	DIRN.	SUR	22	0	0	9.3	1.5	9.4
41630	20.5	-50.7	ALL	DIRN.	SUR	108	0	0	43.7	10.3	44.8
41651	31.2	-67.3	ALL	DIRN.	SUR	14	0	0	18.0	-30.0	35.0
44607	55.1	-27.3	ALL	DIRN.	SUR	528	0	0	16.5	2.8	16.7
44724	42.0	-32.9	ALL	DIRN.	SUR	319	0	0	12.7	3.2	13.1
44726	31.6	-55.5	ALL	DIRN.	SUR	276	0	0	23.9	0.1	23.9
44727	33.5	-36.7	ALL	DIRN.	SUR	20	0	0	18.0	-3.8	18.4
44777	57.3	-16.1	ALL	DIRN.	SUR	674	0	0	17.9	7.8	19.6
44808	40.5	-69.4	ALL	DIRN.	SUR	1	0	0	0.0	-15.0	15.0
62506	36.7	-24.3	ALL	DIRN.	SUR	346	0	0	17.4	-3.5	17.8
62508	39.6	-18.2	ALL	DIRN.	SUR	492	0	0	16.2	-3.4	16.6
62597	53.1	-14.6	ALL	DIRN.	SUR	797	0	0	39.9	2.6	40.0
62675	37.9	-10.9	ALL	DIRN.	SUR	12	0	0	29.6	36.9	47.3
62705	55.0	-12.5	ALL	DIRN.	SUR	1	0	0	0.0	-9.0	9.0
62722	38.1	-10.5	ALL	DIRN.	SUR	13	0	0	62.2	-4.3	62.4
62725	36.7	-9.5	ALL	DIRN.	SUR	7	0	0	24.3	66.8	71.1
62762	38.0	-10.3	ALL	DIRN.	SUR	2	0	0	0.2	92.1	92.1
62763	37.4	-9.7	ALL	DIRN.	SUR	15	0	0	23.7	43.7	49.7

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	3314	0	4	1.6	0.0	3302	0	5	0	7.3	1.0
ACA	1482	0	2	1.8	0.1	1503	0	2	0	6.8	0.9
AEA	140	1	6	1.9	0.7	137	0	7	0	8.1	1.5
AEL	291	1	13	1.7	-0.4	296	0	13	0	8.2	1.0
AEY	26	0	8	3.0	1.3	26	4	4	0	6.4	0.8
AFL	382	1	3	1.8	0.3	383	1	4	0	7.7	0.6
AFR	1163	1	9	1.6	0.0	1170	0	8	0	6.7	0.9
AIH	161	0	7	1.7	-0.4	162	1	7	0	5.8	1.3
AJM	91	1	3	1.5	-0.6	92	0	3	0	7.3	1.4
AMM	94	1	6	1.4	0.3	91	0	9	0	9.6	0.3
AMT	31	0	84	2.7	2.0	32	0	16	0	9.3	2.8
AMX	194	2	6	2.0	0.3	192	1	3	0	8.5	0.8
ANZ	207	0	1	1.9	-1.1	205	0	3	0	7.5	-0.1
AOM	391	1	4	1.6	0.7	399	0	4	0	6.3	0.9
AVA	195	1	5	1.9	0.5	195	0	4	0	8.3	0.5
AZA	643	2	5	1.9	0.4	644	0	5	0	8.0	0.8
BAF	27	0	4	1.6	-0.7	27	0	4	0	7.5	1.9
BAL	181	0	13	1.4	-0.3	183	1	16	0	7.9	0.9
BAW	1427	1	7	1.9	0.0	1424	0	8	0	7.0	0.8
BLX	20	5	5	1.6	-0.9	20	0	0	0	6.8	0.9
BWA	70	0	7	2.6	1.9	70	0	10	0	10.2	0.6
CDN	419	0	1	1.5	0.1	419	0	3	0	7.0	0.3
CFC	31	0	3	1.8	0.5	33	0	3	0	5.7	0.7
CFG	429	1	3	1.6	-0.7	429	0	3	0	7.6	0.8
CLX	286	0	3	1.6	-0.1	283	0	3	0	6.6	0.1
CMM	471	0	1	1.5	0.1	473	0	2	0	6.5	0.6
COA	549	1	5	1.6	0.0	554	0	7	0	10.2	1.6
CRL	216	0	3	1.8	0.4	219	0	4	0	8.0	0.8
CTB	102	0	4	1.4	0.1	103	0	8	0	6.5	1.5
CUB	89	2	6	2.4	1.6	88	0	5	0	8.5	-0.2
DAL	1600	0	14	1.7	-0.4	1615	0	16	0	8.9	0.8
DBY	356	0	2	1.4	-0.6	353	0	3	0	7.8	1.2
DCS	39	0	3	1.7	-0.3	40	0	5	0	6.8	1.1
DLH	1706	0	4	1.6	-0.1	1695	0	4	0	6.2	0.9
EEZ	83	1	100	2.6	1.4	84	0	13	0	11.5	2.6
ELY	154	0	1	1.2	-0.1	155	0	3	0	8.2	1.4
ETH	26	0	15	1.1	-0.3	28	0	18	0	9.8	0.9
EWW	106	0	7	1.7	0.3	107	0	6	0	7.1	0.7
FDX	579	1	7	1.5	0.1	588	1	7	0	7.1	0.8
FIN	266	0	2	1.6	0.2	258	0	3	0	7.4	0.3
GAF	112	0	3	1.5	-0.3	112	1	4	0	6.1	0.4
GCO	72	1	6	1.2	0.2	71	0	20	0	16.3	2.5
GRL	70	0	6	1.6	0.1	70	0	4	0	5.0	0.3
GTI	132	0	5	1.4	-0.6	132	0	7	0	9.8	0.6
HLF	47	0	2	1.7	-0.6	47	0	2	0	6.4	0.1
IBE	1267	1	10	1.8	0.7	1239	0	10	0	8.2	0.7
ICE	1244	0	3	1.6	0.1	1237	0	3	0	6.3	0.9
IWD	39	0	3	1.3	-0.6	39	0	8	0	11.4	0.4
JKK	263	0	6	1.6	0.1	240	0	9	0	9.3	0.4
JMC	124	0	13	1.6	1.1	120	1	18	0	6.8	0.6
KLM	1750	0	7	1.5	0.1	1759	0	8	0	7.2	0.6
LDA	92	0	4	1.0	-0.1	90	0	3	0	7.7	0.6
LDI	376	1	100	1.8	-0.9	372	0	7	0	7.4	0.6
LIB	118	1	4	1.7	1.0	120	0	4	0	7.0	1.3
LOT	331	0	4	1.9	-0.9	332	0	6	0	7.4	0.7
LTU	520	0	6	1.6	-0.1	505	1	6	0	7.0	0.9
MAH	26	0	4	2.5	-1.0	27	0	4	0	10.1	1.5
MAS	52	0	0	1.5	0.2	51	0	4	0	10.9	0.4
MON	96	0	3	1.9	0.0	99	0	2	0	5.8	0.8

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
MPD	117	0	7	1.8	0.4	116	0	9	0	8.6	-0.2
MPH	511	0	2	1.9	-0.3	511	0	3	0	7.7	0.7
NCA	34	0	0	1.5	0.4	34	3	3	0	6.9	-0.2
NWA	3640	0	2	1.7	0.4	3568	0	3	0	7.4	0.8
OAL	20	0	5	1.9	-0.1	22	0	5	0	10.0	2.4
PAC	174	1	6	1.9	0.2	176	0	5	0	7.8	0.4
RAM	46	0	9	3.1	-0.6	45	0	7	0	6.6	-0.3
RCH	119	1	8	1.7	0.5	121	0	14	0	10.5	2.0
RJA	47	0	4	1.8	-0.4	47	2	9	0	7.7	0.9
ROY	100	1	9	2.0	-0.3	103	0	10	0	10.1	1.8
RRR	217	1	10	1.8	0.3	216	0	11	0	7.6	0.7
RZO	78	0	6	1.5	-0.3	78	1	6	0	6.7	1.9
SAS	1499	0	29	1.5	-0.3	1499	0	30	0	6.4	0.7
SIA	122	1	2	1.6	-0.9	124	0	2	0	5.7	0.6
SLR	121	0	10	1.5	-0.8	122	0	11	0	8.2	1.5
SNB	45	0	2	1.5	-0.5	47	0	6	0	7.7	0.6
SSV	25	0	8	1.7	-0.1	26	0	12	0	11.3	2.0
SVA	115	1	4	1.7	-0.2	123	1	6	0	7.3	1.0
SWR	80	0	3	1.5	0.3	78	1	4	0	6.3	1.7
TAP	421	0	4	1.4	-0.2	418	0	5	0	7.8	1.5
TOW	21	0	10	2.4	0.3	20	0	10	0	10.7	-0.2
TPA	28	0	4	1.0	0.4	28	0	4	0	9.4	1.4
TSC	138	1	3	1.7	0.2	141	0	6	0	9.3	0.5
TWA	740	1	5	1.8	0.1	702	0	5	0	8.1	1.0
UAL	1989	1	100	1.7	0.1	1999	0	100	0	5.9	0.6
UPS	682	1	13	1.8	0.4	677	0	12	0	7.5	1.2
USA	262	0	2	1.3	0.0	215	0	3	0	6.4	1.1
VIR	576	0	2	1.7	-0.2	576	0	3	0	6.6	1.0
VKG	44	2	2	1.5	-0.3	45	2	4	0	6.9	-0.6
VPB	36	0	3	2.4	0.4	37	0	0	0	6.4	0.8
WOA	147	1	7	1.2	0.5	148	1	9	0	7.8	0.4
BA	1372	0	7	1.4	0.6	1368	0	7	0	5.3	0.8
EU	16232	0	14	1.2	-0.1	16232	0	14	0	5.2	0.6
KL	3490	0	15	1.3	0.7	3488	0	15	0	5.1	1.1
LH	652	0	5	1.7	1.2	648	0	4	0	4.9	0.7
N	376	3	6	2.6	0.9	388	0	3	0	7.5	0.4
US ACARS	14595	0	19	1.4	0.5	14586	0	18	0	6.0	0.8

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

```
 WMO   OBS                NUM    NUM
IDENT  TIME  ELM   LEV    OBS   GROSS     SD     RMS     BIAS

ELML7   00    Z    100    15      0      16.3    36.2    32.3
ELML7   12    Z    100    19      0      16.1    45.6    42.7
FNOR    00    Z    100    10      0      12.5    24.5    21.1
FNOR    12    Z    100    13      0      15.0    26.4    21.7
FNOU    00    Z    100    12      0      15.1    31.4    27.6

FNOU    12    Z    100    11      0      20.8    26.5    16.5
FNPH    00    Z    100    11      0      12.6    21.4    17.3
FNPH    12    Z    100    11      0      10.8    15.0    10.5
FNRS    00    Z    100    12      0      13.4    22.8    18.4
FNRS    12    Z    100    10      0      10.7    14.8    10.2

LDWR    00    Z    100    23      0       8.1     8.4     2.4
LDWR    12    Z    100    24      0      18.7    23.0   -13.5
OVYA2   00    Z    100    10      0      19.8    23.7    13.1
OVYA2   12    Z    100     8      0      74.8    78.7   -24.5
OXYH2   00    Z    100    10      0      15.1    17.6     9.0

OXYH2   12    Z    100    16      0      35.3    35.3     0.3
SHIPCH  00    Z    100     4      0      51.5    67.3    43.3
SHIPCH  12    Z    100     6      1       8.8    92.9    92.5
SHIPCK  00    Z    100     1      0       0.0    19.0    19.0
SHIPCK  12    Z    100     1      0       0.0    77.0    77.0

S6LA    00    Z    100     9      0       7.7    29.0    28.0
S6LA    12    Z    100     9      0      13.7    22.8    18.2
ZCBP6   00    Z    100     2      0      18.5    40.9    36.5
ZCBP6   12    Z    100     3      0      14.1    32.5    29.3
03953   00    Z    100    29      0      12.1    34.0    31.8

03953   12    Z    100    29      0       9.7    17.4    14.4
04018   00    Z    100    27      0      13.3    19.1    13.8
04018   12    Z    100    25      0      11.4    13.7     7.6
04220   00    Z    100    30      0       8.0    17.6    15.7
04220   12    Z    100    27      0       8.6    12.9     9.6

04270   00    Z    100    28      0      10.1    12.6     7.4
04270   12    Z    100    28      0      15.7    16.3     4.2
04339   00    Z    100    30      0      10.5    19.7    16.7
04339   12    Z    100    28      0       8.2    17.8    15.8
04360   00    Z    100    28      0      12.5    14.8     8.0

04360   12    Z    100    29      0      12.3    13.1     4.6
08001   00    Z    100    25      2      23.2    25.2     9.8
08001   12    Z    100    27      0      25.7    25.7    -1.8
08508   00    Z    100    27      0      13.3    25.9    22.2
08508   12    Z    100    28      0      16.2    20.9    13.2

08522   12    Z    100    28      0      12.3    14.6     7.9
08594   12    Z    100    24      0      18.1    36.9    32.2
71600   00    Z    100    30      0      13.1    20.2    15.4
71600   12    Z    100    29      0      13.2    18.7    13.2
72201   00    Z    100    29      0      14.5    39.9    37.2

72201   12    Z    100    29      0      38.5    47.2    27.2
72402   00    Z    100    27      0      41.9    56.1    37.4
72402   12    Z    100    26      0      20.5    53.7    49.6
74494   00    Z    100    25      0      11.1    15.5    10.8
74494   12    Z    100    27      0      10.3    11.4    -4.9

78016   12    Z    100    27      0      13.4    42.8    40.7
```

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
ELML7	00	Z	500	21	0	8.7	14.0	11.0
ELML7	12	Z	500	22	0	6.4	14.6	13.1
FNOR	00	Z	500	11	1	15.0	15.0	1.3
FNOR	12	Z	500	14	0	12.2	15.4	9.4
FNOU	00	Z	500	14	0	6.2	11.2	9.3
FNOU	12	Z	500	12	0	7.4	13.6	11.4
FNPH	00	Z	500	12	0	9.0	10.4	5.2
FNPH	12	Z	500	11	0	8.3	11.9	8.5
FNRS	00	Z	500	14	0	5.3	6.3	3.4
FNRS	12	Z	500	11	0	7.7	8.7	4.0
LDWR	00	Z	500	27	0	9.2	10.4	4.9
LDWR	12	Z	500	25	0	11.2	14.2	-8.8
OVYA2	00	Z	500	10	0	5.9	15.7	14.6
OVYA2	12	Z	500	8	0	18.3	19.5	6.9
OXYH2	00	Z	500	13	0	8.7	9.9	4.8
OXYH2	12	Z	500	17	0	14.0	16.1	-8.1
SHIPCH	00	Z	500	7	0	12.3	20.0	15.7
SHIPCH	12	Z	500	10	0	4.8	20.2	19.6
SHIPCK	00	Z	500	3	0	2.1	10.5	10.3
SHIPCK	12	Z	500	2	0	9.5	12.1	7.5
S6LA	00	Z	500	9	0	9.5	26.2	24.4
S6LA	12	Z	500	9	0	8.5	14.0	11.1
ZCBP6	00	Z	500	3	0	5.0	8.9	7.3
ZCBP6	12	Z	500	3	0	8.0	16.4	14.3
03953	00	Z	500	29	0	7.9	14.6	12.2
03953	12	Z	500	29	0	9.1	11.2	6.6
04018	00	Z	500	28	0	8.8	16.1	13.5
04018	12	Z	500	26	0	11.1	11.7	3.9
04220	00	Z	500	30	0	8.4	12.4	9.1
04220	12	Z	500	29	0	7.0	7.4	2.6
04270	00	Z	500	30	0	11.6	13.1	6.1
04270	12	Z	500	28	0	12.8	12.8	0.1
04339	00	Z	500	30	0	8.1	15.4	13.1
04339	12	Z	500	28	0	13.1	15.7	8.8
04360	00	Z	500	28	0	9.3	11.8	7.3
04360	12	Z	500	29	0	9.3	9.4	-1.3
08001	00	Z	500	26	2	10.4	10.4	0.2
08001	12	Z	500	27	1	14.1	15.3	-5.9
08508	00	Z	500	29	0	7.1	7.9	3.5
08508	12	Z	500	28	0	8.2	8.3	0.9
08522	12	Z	500	28	0	15.0	15.0	0.1
08594	12	Z	500	26	0	5.9	7.9	5.3
60020	00	Z	500	25	0	7.1	12.3	10.0
60020	12	Z	500	28	0	7.1	10.6	7.9
71600	00	Z	500	30	0	8.5	10.0	5.3
71600	12	Z	500	29	0	8.6	11.8	8.1
72201	00	Z	500	29	0	5.1	7.8	5.9
72201	12	Z	500	29	0	9.0	9.1	-1.3
72402	00	Z	500	27	1	6.2	13.9	12.5
72402	12	Z	500	27	0	7.0	11.1	8.6
74494	00	Z	500	28	0	8.4	9.4	4.1
74494	12	Z	500	27	0	7.9	7.9	-1.0
78016	12	Z	500	28	0	13.8	24.0	19.7

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
ELML7	00	V	100	15	0	0	6.2	-1.7	0.6
ELML7	12	V	100	20	0	0	5.1	-0.3	-0.4
FNOR	00	V	100	11	0	0	5.2	0.0	1.2
FNOR	12	V	100	11	0	0	7.3	-0.3	2.3
FNOU	00	V	100	12	0	0	3.8	2.0	0.3
FNOU	12	V	100	10	0	0	3.8	0.4	0.1
FNPH	00	V	100	11	0	0	4.3	1.9	0.2
FNPH	12	V	100	8	0	0	3.7	-0.8	0.7
FNRS	00	V	100	6	0	0	3.3	-1.1	0.7
FNRS	12	V	100	9	0	0	5.6	0.9	0.3
LDWR	00	V	100	26	0	0	2.5	-0.3	0.2
LDWR	12	V	100	26	0	0	2.2	-0.2	0.0
OVYA2	00	V	100	8	0	0	2.8	0.9	0.4
OVYA2	12	V	100	6	0	0	2.9	-0.5	0.3
OXYH2	00	V	100	9	0	0	4.1	-0.1	-1.8
OXYH2	12	V	100	14	0	0	4.1	-0.1	0.4
SHIPCH	00	V	100	3	0	0	11.1	8.5	-0.4
SHIPCH	12	V	100	2	0	0	7.0	3.7	-4.9
SHIPCK	00	V	100	2	0	0	2.3	-1.1	1.6
SHIPCK	12	V	100	1	0	0	2.5	2.3	-1.0
S6LA	00	V	100	10	0	0	4.4	0.7	-1.9
S6LA	12	V	100	7	0	0	2.5	1.8	0.9
ZCBP6	00	V	100	1	0	0	8.2	-7.0	4.2
ZCBP6	12	V	100	1	0	0	2.1	1.0	-1.9
03953	00	V	100	29	0	0	3.1	-0.9	-0.3
03953	12	V	100	28	0	0	2.2	0.3	0.5
04018	00	V	100	27	0	0	3.4	0.0	-0.1
04018	12	V	100	25	0	0	3.4	0.2	-0.4
04220	00	V	100	28	0	0	3.4	0.4	-0.3
04220	12	V	100	26	0	0	3.6	0.0	1.0
04270	00	V	100	29	0	3	4.6	0.2	-0.3
04270	12	V	100	28	0	0	3.0	-0.3	-0.1
04339	00	V	100	31	0	0	4.0	0.0	-0.3
04339	12	V	100	23	0	0	4.3	0.4	-1.0
04360	00	V	100	29	0	0	2.9	0.2	-0.1
04360	12	V	100	28	0	0	3.5	0.1	-0.8
08001	00	V	100	27	0	0	4.9	0.1	0.7
08001	12	V	100	22	0	0	3.3	-0.1	0.6
08508	00	V	100	21	0	0	4.0	-0.1	-0.3
08508	12	V	100	22	0	0	4.1	0.9	-0.1
08522	12	V	100	28	0	0	4.6	1.8	0.6
08594	12	V	100	11	0	100	5.6	-1.1	2.9
71600	00	V	100	31	0	0	3.5	0.0	-0.3
71600	12	V	100	29	0	0	3.3	0.8	-0.7
72201	00	V	100	30	0	0	4.7	0.7	0.2
72201	12	V	100	29	0	0	3.7	0.0	-1.9
72402	00	V	100	28	0	0	4.5	-0.4	-0.5
72402	12	V	100	25	0	0	5.1	-0.3	0.4
74494	00	V	100	24	0	4	5.9	1.2	0.7
74494	12	V	100	24	0	0	3.2	0.9	0.0
78016	12	V	100	27	0	0	4.1	0.5	-0.9

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: MAY 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in $m\ s^{-1}$
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
ELML7	00	V	500	23	0	0	4.9	0.8	0.7
ELML7	12	V	500	22	0	0	4.2	-0.8	0.5
FNOR	00	V	500	13	0	0	5.1	0.2	1.2
FNOR	12	V	500	12	0	0	5.0	0.5	1.2
FNOU	00	V	500	15	0	0	4.0	0.2	0.9
FNOU	12	V	500	12	0	0	4.3	-1.6	-0.3
FNPH	00	V	500	11	0	0	3.8	0.4	-0.7
FNPH	12	V	500	10	0	0	3.3	-2.1	0.5
FNRS	00	V	500	7	0	0	2.7	-0.2	-0.3
FNRS	12	V	500	9	0	0	3.2	-0.2	0.7
LDWR	00	V	500	26	0	0	3.6	-0.3	0.1
LDWR	12	V	500	26	1	3	16.0	0.4	3.1
OVYA2	00	V	500	9	0	0	2.6	0.4	-0.2
OVYA2	12	V	500	7	0	0	4.0	0.6	0.2
OXYH2	00	V	500	14	0	0	3.8	1.5	0.0
OXYH2	12	V	500	16	0	0	2.8	0.4	0.8
SHIPCH	00	V	500	6	0	0	5.0	1.9	-0.8
SHIPCH	12	V	500	6	0	0	6.6	4.6	-0.3
SHIPCK	00	V	500	4	0	0	6.6	-1.4	-2.5
SHIPCK	12	V	500	2	0	0	1.9	0.0	-1.8
S6LA	00	V	500	10	0	0	3.2	0.7	-0.8
S6LA	12	V	500	9	0	11	7.5	1.9	-0.2
ZCBP6	00	V	500	2	0	0	2.3	-0.9	1.2
ZCBP6	12	V	500	3	0	33	28.9	-10.6	14.3
03953	00	V	500	30	0	0	3.2	0.2	-0.1
03953	12	V	500	29	0	0	4.4	0.5	0.2
04018	00	V	500	28	0	0	5.0	2.4	0.0
04018	12	V	500	26	0	0	4.2	1.0	0.5
04220	00	V	500	26	0	0	4.0	-0.1	0.1
04220	12	V	500	26	0	0	4.3	-0.7	0.8
04270	00	V	500	31	0	0	4.7	-0.9	0.0
04270	12	V	500	28	0	0	4.2	-1.2	-0.1
04339	00	V	500	31	0	0	4.2	0.5	-0.4
04339	12	V	500	28	0	0	5.9	1.1	-0.3
04360	00	V	500	29	0	0	4.5	-0.1	-0.1
04360	12	V	500	28	0	3	6.1	-0.5	0.0
08001	00	V	500	29	0	0	4.1	-0.1	-0.9
08001	12	V	500	24	0	0	3.4	0.0	-0.3
08508	00	V	500	23	0	0	3.6	-0.4	-0.9
08508	12	V	500	22	0	0	3.5	-0.7	-0.2
08522	12	V	500	28	0	0	4.6	1.0	1.5
08594	12	V	500	11	0	100	3.6	-1.9	-0.6
60020	00	V	500	26	0	0	4.2	1.2	0.4
60020	12	V	500	26	0	0	4.9	1.2	1.2
71600	00	V	500	31	0	0	3.0	0.1	0.4
71600	12	V	500	29	0	0	4.6	1.2	0.4
72201	00	V	500	30	0	0	2.7	0.2	-1.1
72201	12	V	500	29	0	0	2.7	0.0	-0.8
72402	00	V	500	29	0	0	3.2	0.7	-0.4
72402	12	V	500	27	0	0	3.7	-0.1	1.2
74494	00	V	500	27	0	0	3.9	-0.4	1.0
74494	12	V	500	24	0	0	3.5	0.0	1.3
78016	12	V	500	27	0	0	3.7	0.4	-1.0

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45